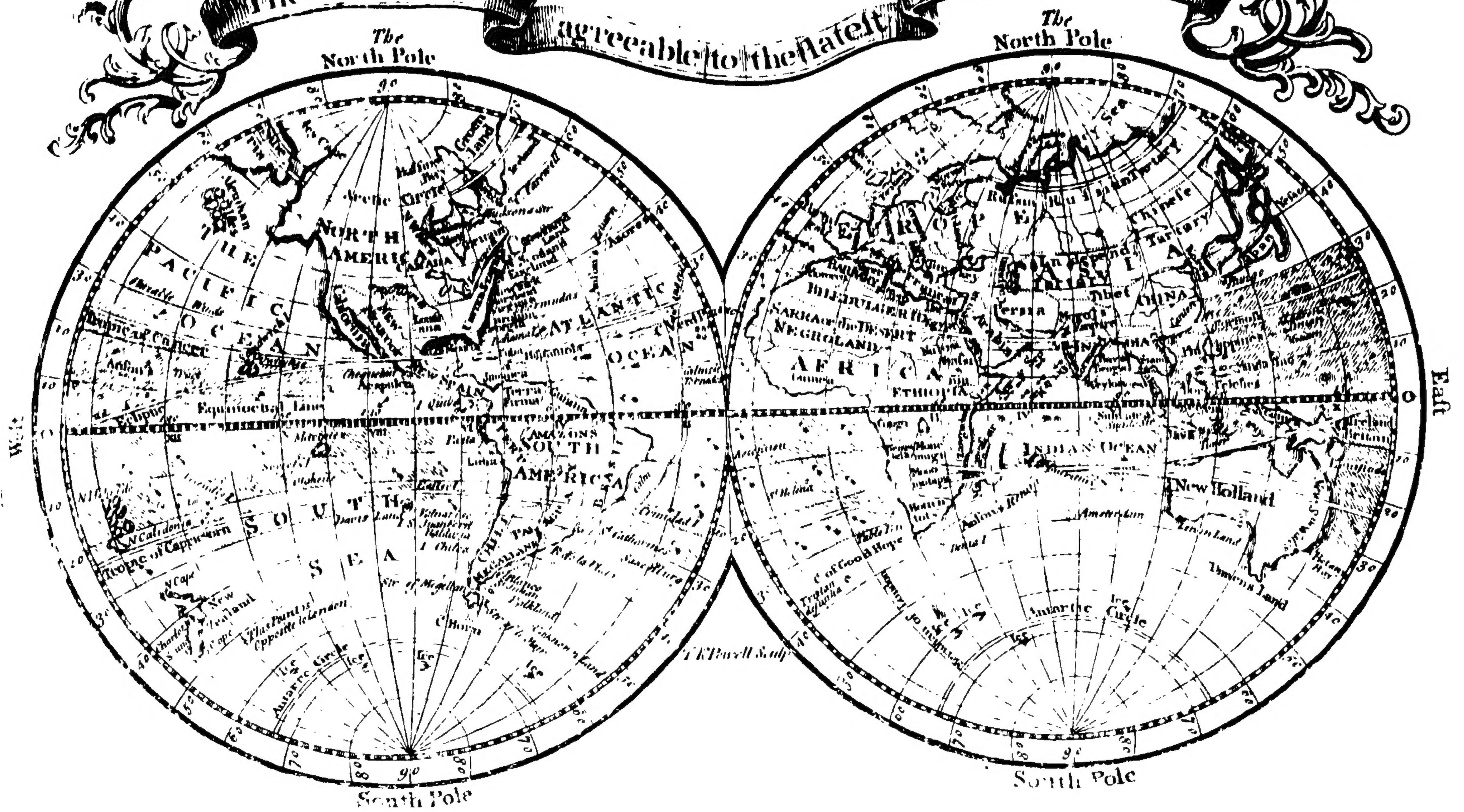


The WORLD agreeable to the latest DISCOVERIES



A
VIEW of the EARTH:
 Being a short but comprehensive
S Y S T E M
 O F
MODERN GEOGRAPHY.

EXHIBITING,

- | | |
|--|--|
| <p>I. A Description of the <i>Figure, Size, Motion, &c.</i> of the <i>Earth</i>; with the <i>Uses</i> and <i>Height</i> of the <i>Atmosphere</i>, or <i>Air</i> surrounding it.</p> <p>II. Such <i>Geographical Definitions, Schemes, and Descriptions</i>, as form a necessary <i>Introduction</i> to this Branch of Learning.</p> <p>III. The <i>Situation</i> and <i>Extent</i> of the several <i>Kingdoms</i> and <i>Nations</i> in each Quarter; their <i>chief City</i>; with the <i>Distance, Direction, and Difference of Time</i> from <i>London</i>.</p> <p>IV. An Account of the several <i>Islands, Trade, Commodities, Religions, Number of Inhabitants, principal Mountains and Rivers</i> in the World; also some <i>Observations</i> on the <i>less known Parts</i>,</p> | <p>the <i>Trade Winds</i>, and <i>Monsoons</i>.</p> <p>V. The <i>Explanation</i> and <i>Use</i> of a new <i>Set of Maps</i>, annexed to the several Quarters, drawn according to the most approved <i>modern Projections</i>, and regulated by <i>Observations</i>.</p> <p>VI. A <i>Description</i> of <i>Commodore Anson's Voyage</i> round the World; shewing the several <i>Islands</i> and <i>Countries</i> he touched at; and the <i>Places</i> where he took any <i>Prize</i>, particularly the rich <i>Manilla Ship</i>.</p> <p>VII. A new and curious <i>Geographical Clock</i>, which points out the <i>Difference of Time</i>, with the <i>Hour</i>, in the <i>different Nations</i> upon <i>Earth</i>, at one View.</p> |
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To which is added,

A Description of the Terrestrial Globe:
 WITH

Its Application to a great Variety of useful Problems. Concluding with some curious *Phænomena* exhibited upon the Globe in a *darkened Room*; and a few *select Paradoxes* and *Theorems*, intended to excite the Attention of the Learner.

The Whole laid down in a Manner so *easy* and *natural*, as to be understood in a *few Days*.

Addressed to the *young Gentlemen* and *Ladies* of *Great Britain* and *Ireland*.

By the Reverend R. TURNER, LL. D.

Late of *Magdalen-Hall, Oxford*, Rector of *Comberton*, Vicar of *Elmly*, and Chaplain to the Right Hon. the Countess Dowager of *Wigton*; Author of a *View of the Heavens*; the *Heavens Surveyed*; *Plain Trigonometry made Easy* by Calculations in Arithmetic only; and a *New Introduction to Book-keeping*.

The FOURTH EDITION, with many Additions and Improvements:
 Particularly an Account of the lately discovered Countries and Islands in the Great South Sea; and also, a large Table of the *Longitude* and *Latitude* of all the remarkable CITIES and TOWNS in the World; being a necessary Appendage to the Use of the *Globe*.

There is not a SON or a DAUGHTER of Adam, but has some Concern in both
 GEOGRAPHY and ASTRONOMY. Dr. WATTS.

L O N D O N:
 Printed for S. CROWDER, in PATER-NOSTER-ROW.
 MDCC LXXXVII.

T O T H E
Y O U N G G E N T L E M E N,
A N D
Y O U N G L A D I E S,

(However titled, or otherwise distinguished)

Through all Parts of the BRITISH EMPIRE,

THIS compendious System of GEOGRAPHY,—a *Science* no longer esteemed a *fine Accomplishment only*, but a *necessary Part of useful Education* (as it impresses such Knowledge of the World, of which you are Inhabitants, as must render You not only more serviceable to your COUNTRY in public Life, but more happy in your smaller Circles of Connection, and private Retirements*) is, with the profoundest Respect,

Dedicated and devoted

To your Services,

By

The A U T H O R.

* Mr. *Salmon* has told us in his *Geographical Grammar*, that *young Gentlemen*, without a general Knowledge of the State of the World—the Manners, Customs and History of the several Nations his Cotemporaries, are neither *capable* of serving their *Country*, nor *qualified* for *Conversation*.—And Mr. *Echard* says—that no *ingenious Person* can be *excused* for his *Ignorance* in this *Science*.

. The *Earth* is given us for an Habitation : 'Tis the Place of present Residence for all our *Fellow-Mortals* : Nor is it possible there should be any *Commerce* maintained with those, who dwell at a Distance, without some Acquaintance with the different Tracts of *Land*, and the *Rivers*, or *Seas*, that divide the *Regions* of the *Earth*.

A S H O R T

S Y S T E M

O F

M O D E R N G E O G R A P H Y.

GEOGRAPHY is a Description of the Earth, as it stands divided into *Land* and *Water*; for both these together constitute the Surface of our Globe:—And, is a *Science* not only curious and entertaining, but of the greatest Use. It opens and enlarges the *Ideas*; gives you true Notions of the various Situations of Kingdoms, Nations, and People; and is of such Consequence in History, that nothing can be understood (with Justness and Propriety) without it. Hence we find the great Mr. *Locke* recommending it in the warmest Manner. He is of Opinion, that *Youth* ought to *begin* with this Science, as an Introduction to their future Studies.

Many Volumes are already extant on this *Kind of Learning*, but their *Size* rather *deters* young *Minds*, than invites them to a Perusal: The following *Compendium*, for this Reason, will not, I flatter myself, be *unacceptable*, as it exhibits (in one short View) every Thing necessary to enable *Youth* to proceed to the larger Systems of *Geography* or *History*, with Ease and Pleasure.

THE EARTH, then, on which we live, is one of the *Planets**; and, however it may appear from the little we can take in at one View, is a *large round Ball*, about 8000 Miles in *Diameter*, and nearly 25000 in *Circumference*. It turns once round upon its *Axis* from *West* to *East* in 24 Hours, which makes the *Sun* and all the *Heavenly Bodies* appear to move the contrary Way, from East to West, in the same Time; this is the Cause of the continual Returns of DAY and NIGHT. At the same Time, it advances in a *Circular Orbit* round the Sun (which remains fixed in the Center at the Distance of 81 Millions of Miles) in the Space of 365 Days, 6 Hours†. This produces the various *Seasons* of the Year,—WINTER, SUMMER, AUTUMN, and SPRING.

* Our EARTH is the third Planet from the Sun, having *Venus* and *Mercury* below, and Mars, Jupiter, and Saturn, above it. Its true Diameter is 7964 Miles; and Circumference 25020 Miles. See my *View of the Heavens*, or *Introduction to Modern Astronomy*.

† Note, These 6 Hours in 4 Years make one Day, which is added to February; then that Month hath 29 Days, and the Year is called Leap-Year; because all the succeeding Days advance or Leap forward one Day more than they would do, if no such Day was added.

That the LAND and WATER, taken together, make one *round* Body, is evident from the many Observations of Persons standing on the Shore and viewing a Ship departing from the Coast. They gradually lose Sight first of the Bottom of the Vessel, whilst they can still see the *Rigging* and *Flags* at the Top: But as the Ship proceeds on, they lose Sight of these also; as if the Whole was sunk into the Deep. Likewise in a Ship making to Land; the Mariners *first* perceive the Tops of *Steeple*s, *Trees*, &c. pointing above the Water; *next*, they see the *Buildings*; and *last* of all, the *Shore*; which can only happen from the *Convexity* or *Roundness* of the Earth, as here delineated.



The *Roundness* of the *Earth* is also confirmed by the many *Voyages* which have been made about it, from *East* to *West*; first—by *Magellan's* Ship in the Years 1519, 1520, and 1521, in 1124 Days;—by Sir *Francis Drake* in the Years 1577, 1578, 1579, and 1580, in 1056 Days;—by Commodore *Anson* in the Years 1740, 1741, 1742, 1743, and 1744, in 1375 Days; and lastly—by Captain *Cook*, who sailed from Plymouth the 26th of August, 1768, and after the most satisfactory Voyage that ever was undertaken, returned and anchored in the Downs, the 12th of June, 1771, having been absent almost three Years.—Many other English Gentlemen have lately navigated round the Globe; as the Captains *Byron*, *Wallis*, *Carteret*, &c.*

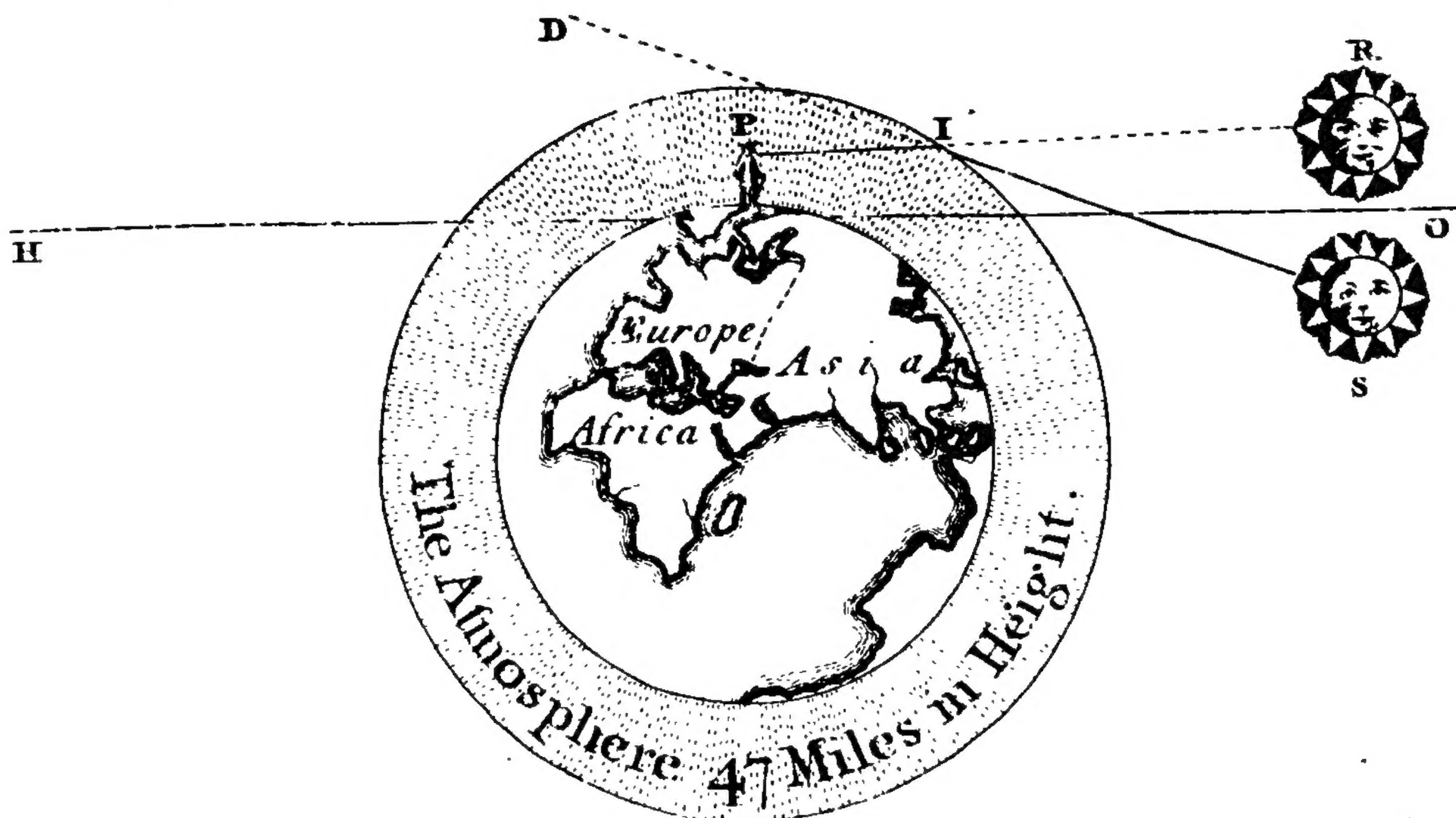
The little *Unevenness* of the Earth's Surface, arising from Hills and Vales, is no material Objection to its being considered as *round*; since the highest *Mountains* bear not so great a Proportion to the Bulk of the Earth itself, as the little *Rifings* in the Coat of an *Orange*, bear to the Bigness of that Fruit.

Those People who inhabit that Part of the Globe exactly under us, are called **ANTIPODES**: their Feet are over against ours; when 'tis Noon with us, 'tis Midnight with them; and *our* Summer is *their* Winter.

* The general Opinion of the *Ancients* was, that the Earth was a large extended plain Surface like a round Table; and all below was *Hades* or *Hell*; and that the *Sun* and the rest of the Heavenly Bodies descended into the *Western Ocean* every Night, and rose out of the *Eastern* every Morning. And not many Ages ago, the Notion of *Antipodes* was zealously opposed: but all these Absurdities are now given up, being obliged to yield to *Observation* and *Experience*. For, our *Mariners* frequently sail round the Globe, and transact Business with the *Antipodes* of many Nations daily.

The EARTH rests upon *Nothing*, but is poised in the Heavens, and surrounded with a Number of small *Atoms*, called the *Atmosphere*, or Air, which gradually grows thinner and lighter, the higher we ascend from its Surface. Its whole Height is supposed to be about 46 or 47 Miles; but on the higher Mountains, as the *Alps* in *Italy*, and the *Andees* in *America*, it is so very *rare*, or *thin*, that we breathe with great Difficulty; and very probably at the Distance of 6 or 8 Miles from the Earth, no *Animal* or *Bird* could live.

The *Use* of this *Atmosphere* is not only to suspend the *Clouds*, furnish us with *Winds* and *Rain**, and serve to the common Purposes of *Breathing*; but is also the Cause of the *Morning* and *Evening Twilight*, and of all the *Glory* and *Brightness* of the *Firmament*.

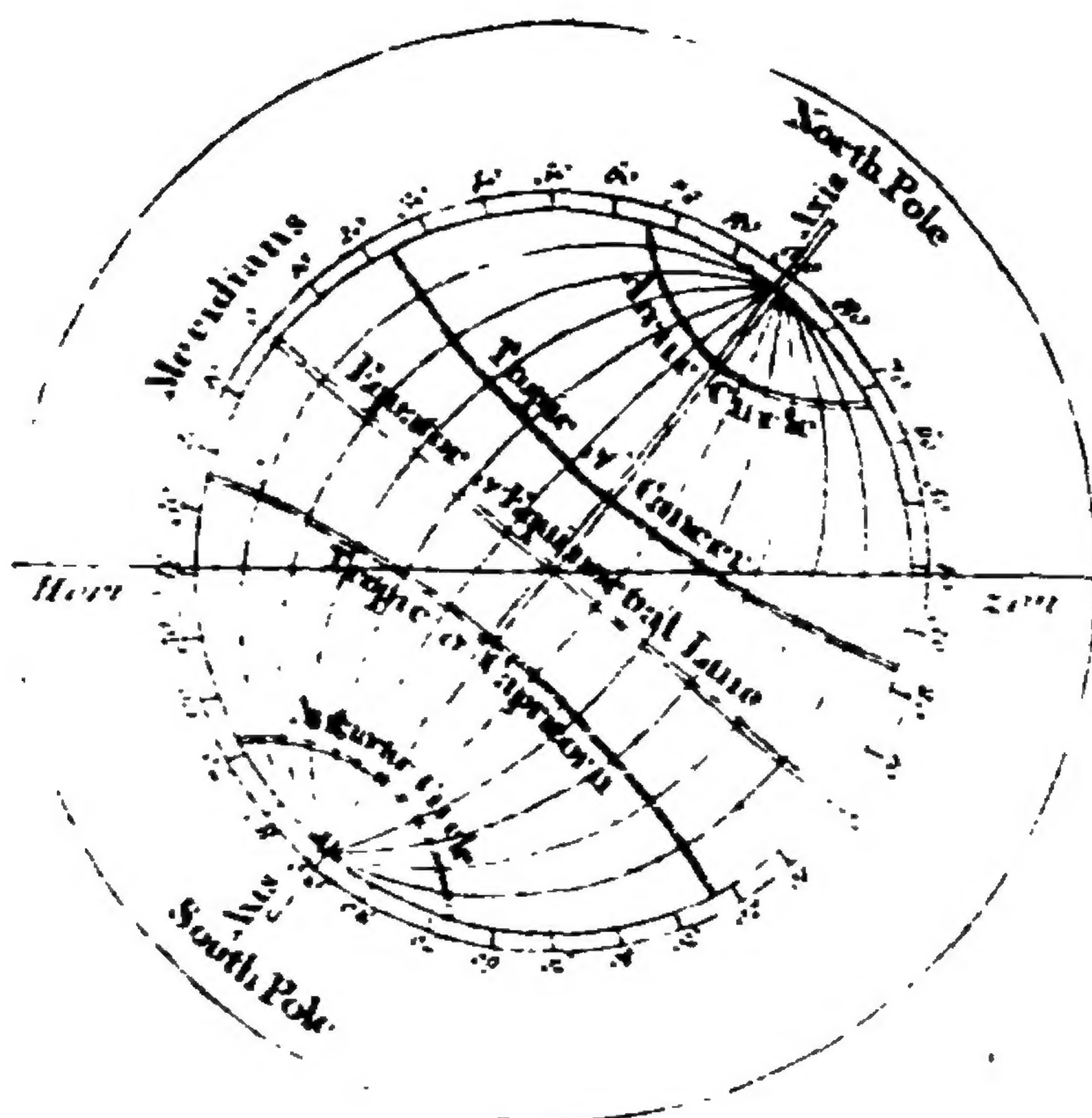


This Figure represents the Earth surrounded with its Atmosphere;—H O is the *Horizon* of a Person standing at P;—also, S represents the Sun as yet really under the Horizon, from which a Ray S I ascends, and falling upon the upper Part of the Air at I, is, by the Resistance it meets with there, bent out of its direct Course towards D, into the Oblique one I P; and so falling upon the Eye of the Spectator, he will then see the Sun in the Direction of this refracted Ray at R, a whole Breadth, or a little more, above its true Place.

By this Means we are favoured with the Sight of the Sun about 3 Minutes and $\frac{1}{4}$ every Morning before it rises above the *Horizon*, and also as much every Evening after it sets below it; which, in one Year, amounts to more than 40 Hours; and so much *Sunshine* are all the Inhabitants on every Part of the Globe blessed with, more than they could be, without some such Divine Contrivance.

* *Clouds* are only Vapours or Steams of Water raised up and suspended in the Atmosphere. *Winds* are only the Particles of the Atmosphere put into Motion,—and, *Rains* are these Clouds falling again to the Earth, when the Atmosphere grows too light (on account of some Winds or Rarefaction taking Place) to support them.

GEOGRAPHERS, for the better understanding this Science, have imagined the Globe to be circumscribed, and divided with several *Lines* and *Circles*, whose *Names*, *Situation*, &c. are as here delineated.



The Line going through the Center of the Globe is called its *Axis*: the Ends are the *two Poles*; the upper one the *North*, the lower the *South*. On this Line the Earth is supposed continually to move round in 24 Hours to cause the Returns of *Day* and *Night*.

The Line or Circle encompassing the Middle of the Globe, dividing it into two equal Parts, between the North and South Poles, is called the *Equator* or *Equinoctial Line*. When the Sun is over this Line (as in *March* and *September*) it is *equal Day* and *Night* all the World over.

The Circles on each Side the Equator, 23 Degrees and $\frac{1}{2}$ from it, are called the *two Tropics*: They limit the Sun's greatest *Distance* from the *Equinoctial* either *Northward* or *Southward*.—That on the North-Side is the *Tropic of Cancer*; when the Sun is over this Line (as in *June*) 'tis our *Summer*, and the Days are at the longest.—That on the South-Side is the *Tropic of Capricorn*; when the Sun is over that (as in *December*) 'tis our *Winter*, and the Days are at the shortest with us; but at the longest with those who live on the South-Side of the *Equinoctial Line*.

The two Circles near the Poles, about 23 Degrees and $\frac{1}{2}$ from them, are called the two *Polar Circles*.—That at the North Pole is also called the *Arctic Circle*; the other at the South, the *Antarctic Circle*.

The

The Lines running from Pole to Pole across the *Tropics* and *Equinoctial* are called *Meridians*. There are generally 24 drawn upon the Globe, corresponding to the 24 Hours of Day and Night. When any of them (as the Earth turns round) is brought opposite the *Sun*, it is then *Noon Day* along that Line from Pole to Pole*.

The Line going across the Middle of the Globe, dividing it into two Hemispheres, is called the *Horizon*. When the Sun ascends above this Line in the East, it is Day with us; but when it descends below it in the West, it is Night. This is called also the *Rational*, or *True Horizon*: But besides this, there is a *sensible* or *visible Horizon*, which is that Circle surrounding us, and bounding our View, when we stand in the open Field.—The Horizon shews not only the rising and setting of the Sun, Moon, and Stars,—the Length of Day and Night, &c. but also marks out the principal *Points* of the World; for the Places where the *Meridian* and *Horizon* cut each other, are called *North* and *South*; and the Places where the *Equator* and *Horizon* cut each other, are termed the *East* and *West*. You may see this more fully explained at Page 9.

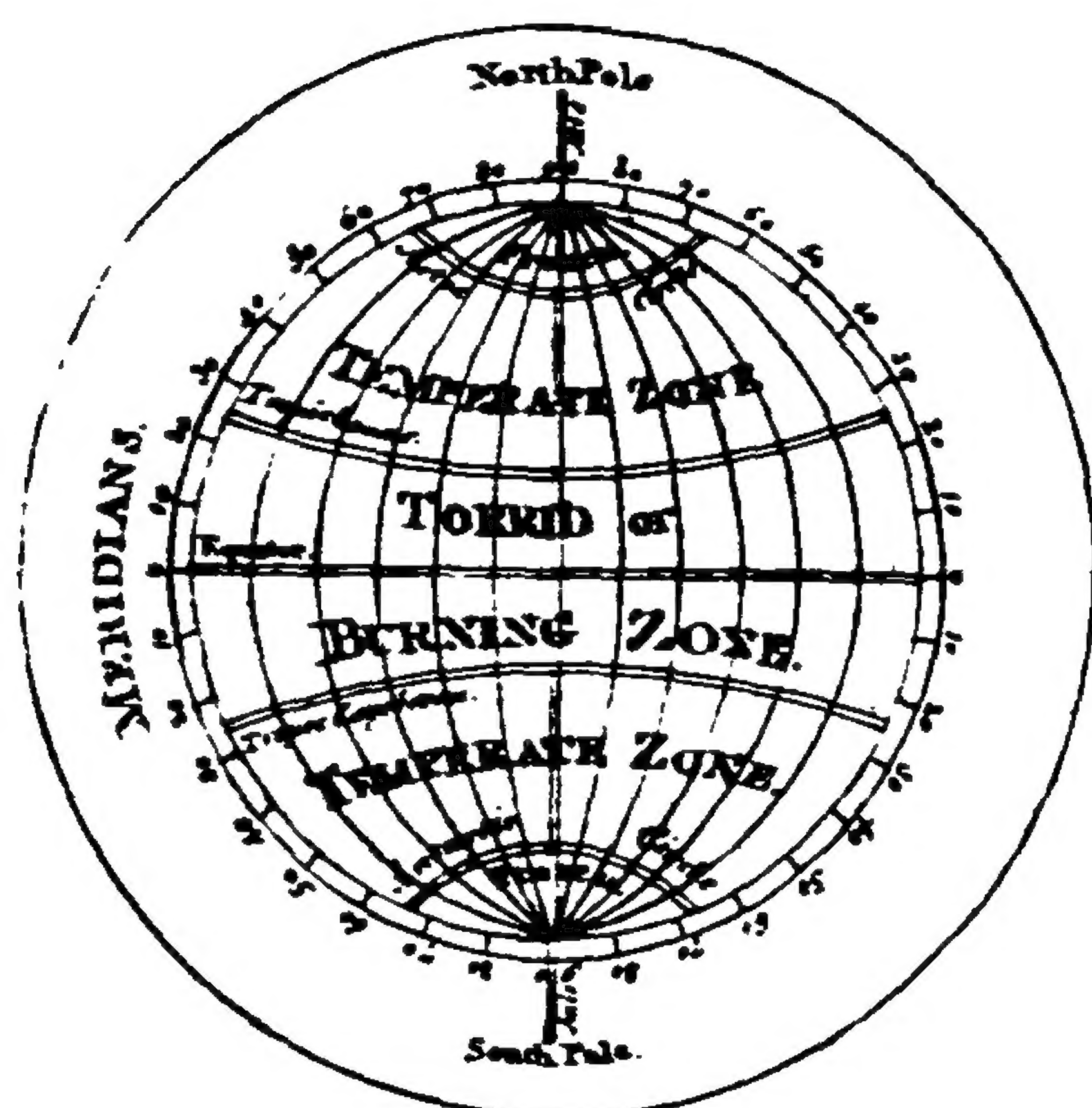
There is generally an *oblique* Line drawn from *Tropic* to *Tropic*, crossing the *Equinoctial*, (as may be seen in the Map at the Beginning of the Book) representing the Sun's apparent Path in the Heavens, which is called the *Ecliptic*; but as there cannot, in Fact, be any such Line upon the Earth, and as a much better Method of shewing the apparent Motion of the Sun may be substituted in its Room, I have, therefore, in this Scheme, omitted it.

Note, The *Equator*, *Ecliptic*, *Meridians*, and *Horizon*, are called *great Circles*, because they cut the Globe in two *equal Parts*; but the *Tropics* and *Polar Circles* are called *lesser Circles*, as they cut the Globe in two *unequal Parts*.

Every Circle on the Globe, whether great or small, is supposed to be divided into 360 equal Parts or Divisions, called *Degrees*; and each of these Degrees into 60 other equal Parts, called *Minutes*.—So that *every Circle*, of whatever Magnitude it is, contains 360 Degrees;—the *Half*, or *Semi-Circle*, 180;—and the *Quarter*, or *Quadrant*, 90.

* The *Meridians* are infinite in Number, for every Place from East to West may be supposed to have a separate one.—Of these *Meridians*, One is called the *First* or *Chief Meridian*, from which the *Longitude* of Places begins to be reckoned: It is of great Note, and has been variously placed by *Geographers*; but now each Country fixes it at the Middle of their own *Capital City*.

As *each* LINE upon the Globe has its distinct Name, so the several Spaces included by these Lines are particularly distinguished. They are called *Zones*, or *Belts*, and are *five* in Number.



All the Space between the two *Tropics*, (which is 47 Degrees broad) is called the *Torrid* or *Burning Zone*; because the Sun, being always over some Part of it, must make it exceeding hot and scorching.

The Spaces between the *Tropics* and *Polar Circles* (each 43 Degrees in Breadth) are called the two *Temperate Zones*; for in these the Heat is moderate, the Sun never coming over the Heads of the Inhabitants.

The Spaces included within the *Polar Circles* (each of which being 47 Degrees over) are the two *Frigid* or *Frozen Zones**; so called on account of the extreme Cold and Ice always found there.

Latitude is the nearest Distance of any Town or Place from the *Equator*, either Northward or Southward, accounted in Degrees and Minutes; each Degree being 60 computed, or 70 measured Miles.

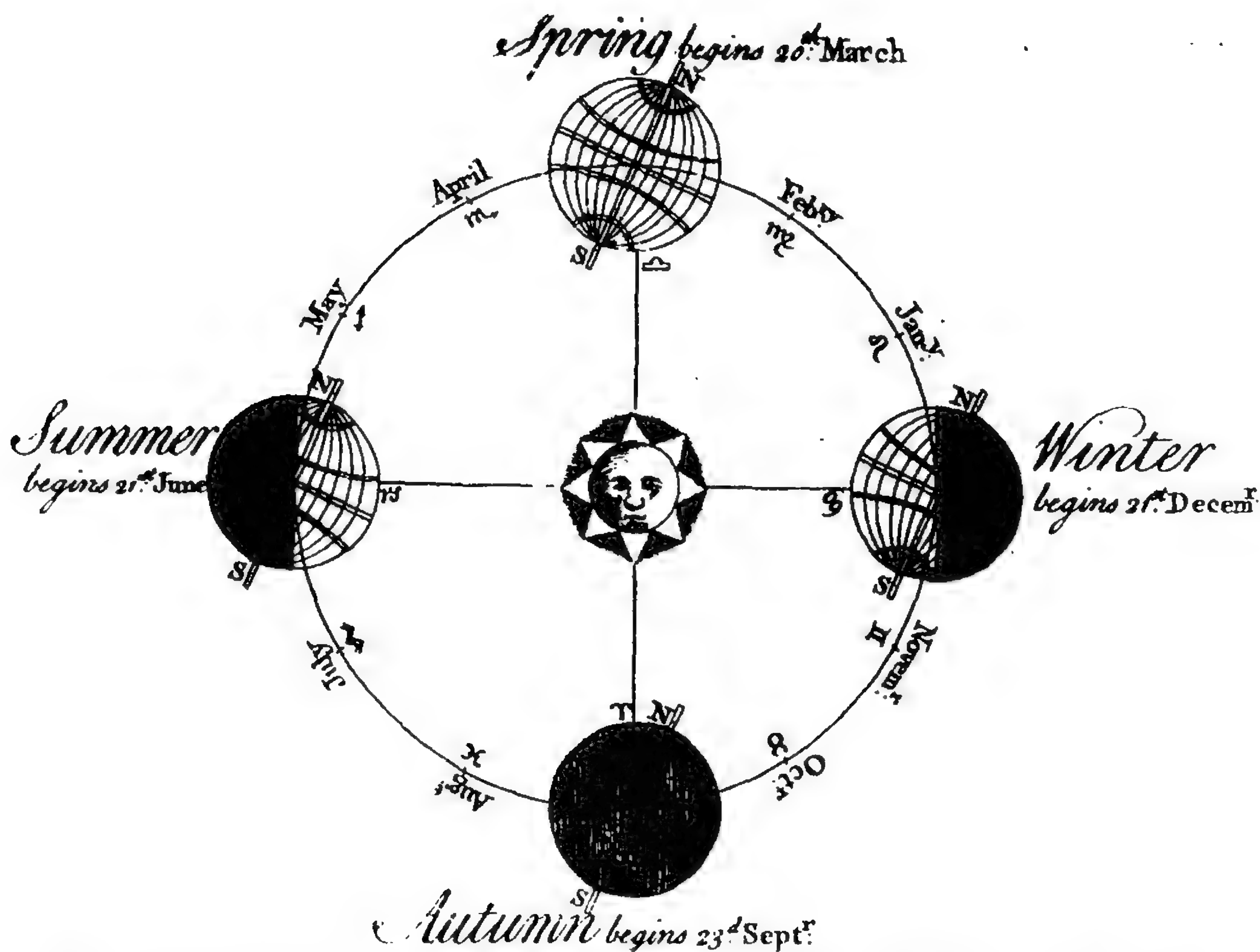
Longitude is the Distance of any Place from a *fixed Meridian*, (as suppose that of *London*) either Eastward or Westward, in Degrees and Minutes.—Longitude has respect to *Time*; every Degree of which is equal to four Minutes.—Thus, if a Place lies one Degree to the *East* of us, it is four Minutes in Time *before* us; but, if it lies one Degree to the *West*, it is four Minutes *after* us.

Note, A Degree of *Longitude* at the *Equator* is 60 Miles, equal to a Degree of *Latitude*; but then these Degrees are continually growing less and less, as the Meridian Lines approach to each other, till they arrive at the Poles, where a Degree measures (you see) nothing at all.

* The Kingdoms, Countries, and Seas, situated in these several Zones, are seen by casting the Eye on the *Map of the World*, at the Beginning of the Book.

The MANNER in which the Earth revolves, to cause the various Changes in the Length of the Day, and *Vicissitudes* of the Year, is exhibited in the following Scheme.

The Earth, in its *annual* Motion, has its *Axis* always inclined * in the same Direction (or *parallel* to itself) and moves from *West* to *East* in 365 Days 6 Hours, and upon this *Position* depends the *Variety* of all the *Seasons*.



In the SPRING, the Sun is over the *Equator*: The Earth is illuminated from Pole to Pole; and the *Days* and *Nights* are equal all the Globe over. —In the SUMMER, the North Pole is turned to the Sun; he is over the *Tropic of Cancer*; our Days are now at the *longest*, and the South Pole is involved in Darknefs. —In AUTUMN, the Earth is arrived to that Part of her Orbit opposite the Spring, and the Sun is got over the *Equator* again. Now both Poles are illuminated, and it is *equal* Day and Night as in the Spring. —In the WINTER, the South Pole becomes turned to the Sun, which is then over the *Tropic of Capricorn*; the Days are then at the *shortest* with us, and the North Pole is wrapt in Obscurity and Shade.

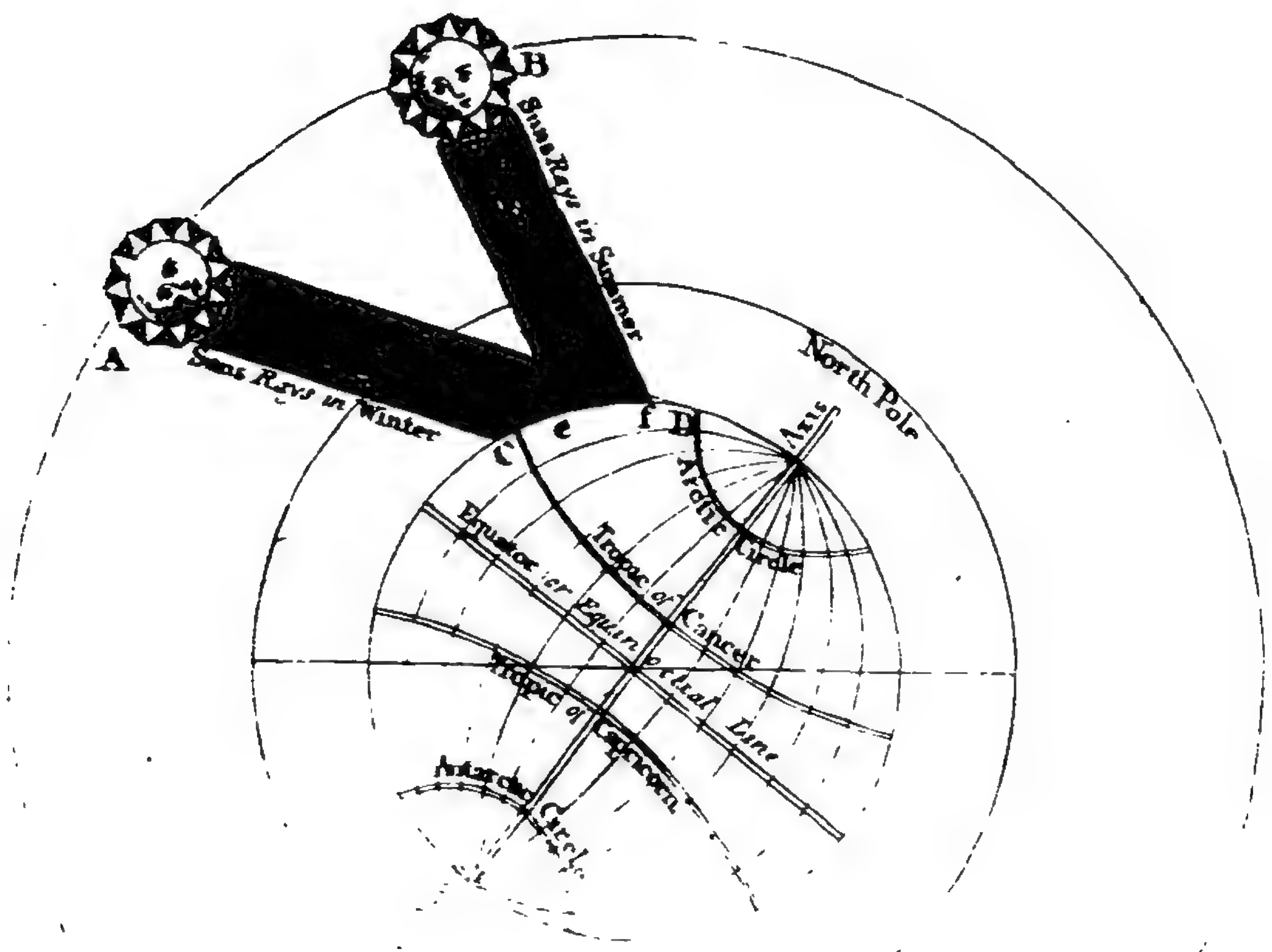
The *Earth* does not revolve in an exact *Circle*, but in an Orb a little *Elliptical*; it must, therefore, be sometimes nearer the Sun, sometimes farther from him: —Must sometimes *move slower*, and sometimes *faster*. This is the *Reason* why our *Summer* half Year, when the Earth is *farthest* from the Sun, is *longer* than the *Winter* half, by about 8 Days, when it is *nearest*.

* The *Unlearned* generally think, that the *Earth* stands still, and the *Sun* moves, to cause Day and Night; and produce *Scripture* to confirm their Opinion: But they should remember, the *Scripture* was not given to teach *Geography* or *Astronomy*, but *Religion*; and therefore these Books, in this Respect, speak only according to the *appearances* of Things; not as they are in *Fact*. See more of this in my *Astronomy*. In the mean Time, I would just observe, that every *Cook* daily shews the Absurdity of the vulgar Opinion: For, we never see them turn the Fire round the Meat; but the Meat always round to the Fire; by which Means, it becomes far more equally warmed and dressed.

The

The nearer any Place is to the Pole, the longer are its Days in the Summer, and the shorter in the Winter: At the very Pole, the Day is six Months; and in Winter, the Night is just the same.

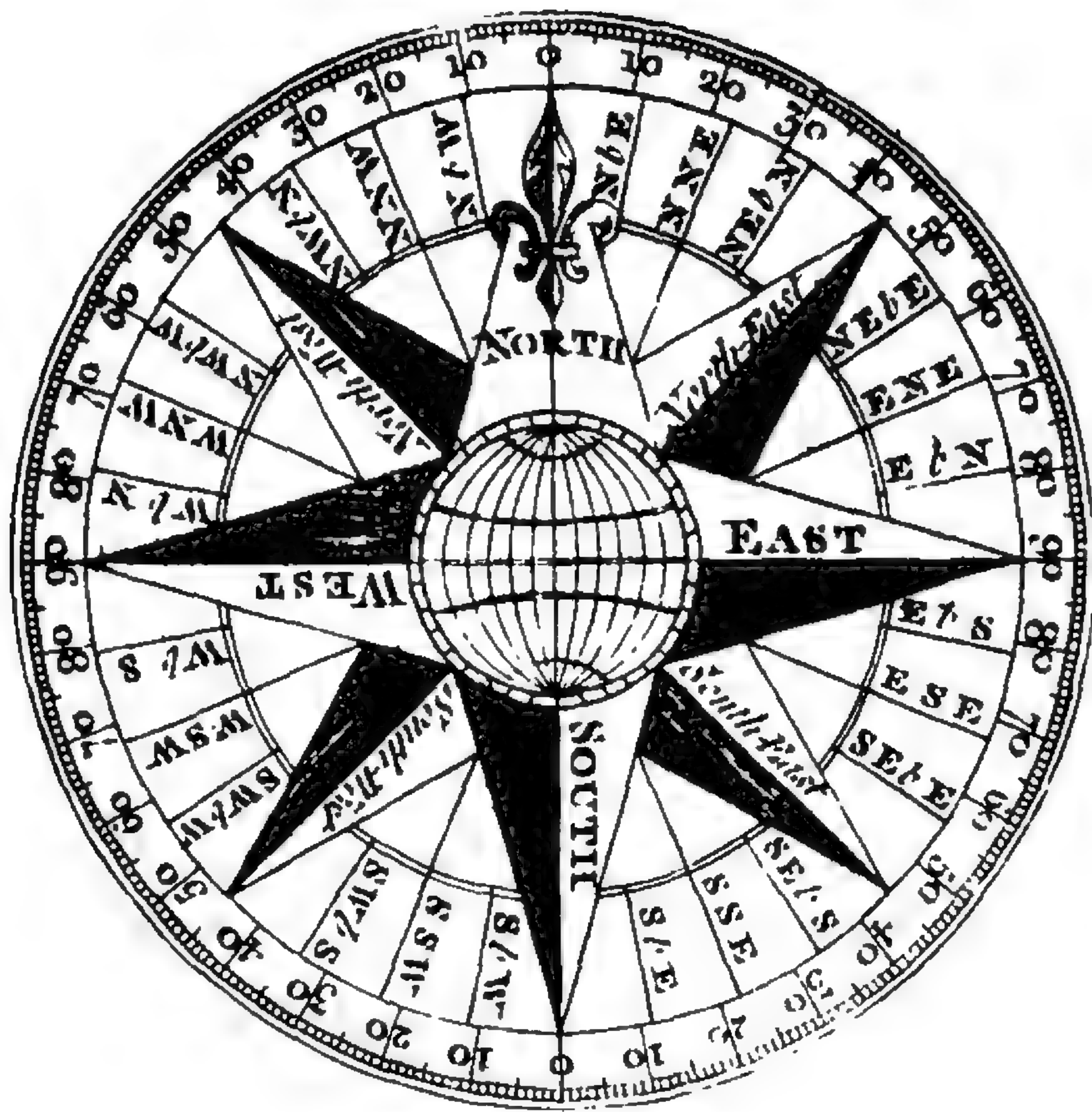
The Reason of the greater Heat in Summer than in Winter, is because the Sun is not only *longer*, but *higher* above the Horizon; consequently, his Rays comes to the Earth in a Direction more *perpendicular* to its Surface, and strike it more forcibly in Summer than in Winter, when the Sun is *lower*, and sends his Rays more *oblique* and *feeble*, and scattered over a larger Part of it.



Let A represent the Height of the Sun at Noon in *Winter*, and B the Height in *Summer*: Then in the former Case, the parallel Rays, which fall upon the Ground, and scatter over it from C to D, will, in the latter Case, occupy only the narrow Space *e f*; consequently, as it is much *less*, it must be more *hot* than before. The Rays of the Sun, also, passing through a much greater Part of the *Atmosphere* in *Winter* than *Summer*, must come to us more *weak* and *faint* in the former State than in the latter. These Circumstances, joined with the longer *Continuance* of the Sun with us in the *Summer*, than in *Winter*, is sufficient to produce the great Disproportion of *Heat* we experience in those two different *Seasons* of the Year.

That **LARGE CIRCLE**, which seems to furround us, when we stand upon some little Hill, or Eminence, in the open Fields, and bounds our View, is called the *Horizon*. Every Part of this Circle is exactly 90 Degrees from the Center of it over our Heads, which Point is called *Zenith*, and the Point of the Heavens, *opposite* or under our Feet, is called the *Nadir*.

This *Great Circle* is supposed to be divided into 4 equal Parts, respecting the four principal *Quarters* of the World.—*East, West, North, and South*, and each of these is also subdivided into 8 other equal Parts, making in all 32, which are called the 32 Points of the *Compass*; whose Names, Situation, &c. are as in the following *Figure*.



The *Learner*, perhaps, will not find the Time *lost*, he shall spend in committing these 32 Points of the *Compass* to *Memory*, as they will enable him to ascertain the *Direction* of the *Winds, Clouds*, or any *Object* from him.

If this *graduated Circle* be drawn upon Paper or Pasteboard, and a Wire touched on a Loadstone, be pasted on the under Side, and then hung by the Means of a little Brass Cap fixed in the Center, on a Pin erected in the Middle of a *Brass* or *Wood* Box covered with a Glass, it will always turn its Points to the correspondent Points of the World; consequently it becomes of infinite Use in conducting the *Mariner* through the extensive *Ocean*, and the *Traveller* over the pathless *Deserts*, which are met with in many Parts of the Earth.

Little *Machines* of this Sort, neatly fitted up for the Pocket, in small Brass Boxes, are to be had at any *Toy-Shop* in Town or Country, at *One Shilling* each.

The GLOBE, as I observed before, is composed of *Land* and *Water*.

The LAND is about *one third* of the whole Surface, and is generally divided into the following Parts, viz.

1. CONTINENTS, which are large Tracts of Land, containing many Kingdoms, and Countries; as Europe, Asia, Africa, &c.—2. ISLANDS, are Parts of Land surrounded by the Sea, as Britain, Ireland, Madagascar, and Japon.—3. PENINSULAS, are such Parts of Land, as are encompassed by Water, except one narrow Part, by which it is joined to the main Land, as Jutland at the Top of Germany, and Morea in Greece.—4. ISTHMUS's are narrow Necks of Land joining the Peninsulas to the main Land, as the Isthmus of Darien, or Panama, in America: the *Isthmus of Corinth* joining the *Morea* to *Greece*.—5. PROMONTARIES, or CAPES, are those high Parts of Land, which shoot far into the Sea, as Cape Verde, and the Cape of Good Hope, both in Africa.—6. COASTS or *Shores* are those Parts of a Country, which border upon the Sea, as the Coast of *France*; the Coast of *Barbary*. Hence sailing near the Shore is called *Coasting*.

The Extent of the WATER on the Earth's Surface is far greater than that of the Land; it is computed to be *two thirds* of the whole Globe, and is distinguished by the following Divisions.

1. OCEANS, which are vast Collections of Water free from Land, as the *Atlantic*, *Ethiopic*, and *Pacific* Oceans.—2. SEAS, are less Extensions of Water, almost surrounded by Land, as the Mediterranean, Baltic, and Euxine; all the rest are but *Parts* of Oceans, and receive their Names from the Land that lies next them: as the Irish Sea, the *British* Seas.—3. LAKES, are Tracts of Water, wholly surrounded by Land, as the Lake of Geneva, the Caspian and Dead Seas.—4. GULPHS, are only *Parts* of the Sea running up into, and every-where bounded with Land, except one Part by which it communicates with the Sea; as the Gulphs of Bothnia, Venice, Persia, and Florida.—5. STREIGHTS are narrow Passages of Water joining one Sea to another, as the Streights of Gibraltar, leading into the *Mediterranean*, the Streights of Babalmandel, leading into the *Red Sea**.

We come now to describe the GRAND DIVISIONS of the Earth, viz. *Europe*, *Asia*, and *Africa*, called the *Old World*, being all that was known to the Ancients: And *North* and *South America*; called the *New World*, on Account of their being discovered but about 294 Years ago, *i. e.* in the Year 1492.

* If a Gulph is very large, it is called an Inland Sea, as the *Mediterranean Sea*. If it is not so large, nor runs so far into the Land, it is called a Bay; as the *Bay of Biscay* in *France*. If it is but small, and runs but a little Way into the Land, it is called a *Creek*, or *Haven*; a Station or Road for Ships; as *Milford Haven* in *Wales*.



EUROPE is bounded on the *North* by the Frozen Ocean—on the *East* by Asia, and the Rivers Don, Walga, and Oby—on the *South* by the Mediterranean,—and on the *West* by the great Atlantic Ocean, being about 3000 Miles in *Length*, and 2500 in *Breadth*. It is the least Quarter, but of the most Renown, for the Temper of the *Air*; the Fruitfulness of the *Soil*; Study of the *Arts* and *Sciences*; but above all, for the Establishment of the *Christian Religion*. It contains the following *Kingdoms* and *States*.

	Kingdoms.	Length.	Breadth.	Chief City.	Dist. & Bearing from London.	Diff. of Time from London.	Religions.	Numb. of Inhab.
British Empire.	England	360	300	London	Miles. * * *	H. M. * * *	Lutherans, &c.	7 Mill.
	Scotland	300	150	Edinburgh	270 N.	0 12 aft.	Calvinists	2 Mill.
	Ireland	300	150	Dublin	250 N. W.	0 26 aft.	Luth. Calv. & Pap.	2 ½ Mill.
	Norway	1000	300	Bergen	550 N.	0 24 bef.	Lutherans	} 2 ½ Mill.
	Denmark	240	180	Copenhagen	480 N. E.	0 50 bef.	Lutherans	
	Sweden	800	500	Stockholm	750 N. E.	1 10 bef.	Lutherans	3 Mill.
	Russia	1500	1100	Petersburgh	1140 N. E.	2 4 bef.	Greek Church	20 Mill.
	Poland	700	680	Warsaw	760 E.	1 24 bef.	Papists	15 Mill.
	Prussian Dominions	Uncertain		Berlin	540 E.	0 59 bef.	Luth. and Calv.	Uncertain.
	Germany	600	500	Vienna	650 E.	1 5 bef.	Pap. Luth. & Calv.	20 Mill.
Nether-lands.	Bohemia	300	250	Prague	600 E.	1 4 bef.	Papists	2 ½ Mill.
	Holland	160	100	Amsterdam	150 E.	0 18 bef.	All Religions	3 Mill.
	Flanders	180	150	Brussels	180 S. E.	0 16 bef.	Papists	1 ½ Mill.
	France	600	500	Paris	160 S. E.	0 9 bef.	Papists	22 Mill.
	Spain	700	500	Madrid	690 S.	0 17 aft.	Papists	9 ¼ Mill.
	Portugal	300	100	Lisbon	840 S. W.	0 38 aft.	Papists	2 Mill.
	Switzerland	260	100	Bern	420 S. E.	0 28 bef.	Calv. and Papists.	2 Mill.
Italy.	Lombardy	Several small States; Piedmont, Montferrat, Milan, Parma, Modena, Mantua, Venice, Genoa, Tuscany, &c. Chief Towns are, Turin, Casal, Milan, Parma, Modena, Mantua, Venice, Genoa, Florence.						
	Papedom	240	150	Rome	780 S. E.	0 52 bef.	Papists	1 ½ Mill.
	Naples	270	180	Naples	870 S. E.	1 0 bef.	Papists	3 ¼ Mill.
	Hungary	300	200	Buda	780 S. E.	1 17 bef.	Papists	3 Mill.
Turkey in Europe.	Danubian Provinces	600	420	{ Constantinople	1320 S. E.	1 58 bef.	Mahometans, with some Jews and Christians	8 Mill.
	Lit. Tartary	380	240	Caffa	1500 E.	2 24 bef.		
	Greece	400	240	Athens	1230 S. E.	1 37 bef.		
	Sardinia Island	135	57	Cagliari	The King resides at Turin, in Italy.		Papists	2 ½ Mill.

The *Situation* of the several *Kingdoms* and *States*, with the *principal* Towns in each, you will find inscribed in the adjoining Map, with their *Distances* and *Positions* exactly laid down with respect to each other.

The *Europeans* in general are well made, and tolerably fair, except in *Spain*, where they begin to be *swarthy*:—In *Dress*, they are fond of imitating the *French*.—The *Spaniards* and *Hungarians* wear *Whiskers*.—The *Turks* long Beards, Turbants, and a long Vest tied with a Sash.—The *Turkish Ladies* Dress much resembles that of the Men.

The

The **COMMODITIES** of these Countries are, in the *Northern Parts*, as in *Norway, Sweden, and Denmark*,—*Pitch, Tar, Rosin, Hemp, Deals, Masts, Oaks, Furs, iron, Coal, Tin, and Fish*.—In the *Middle*, as *Great Britain, northern Part of France, Holland, Germany, and Poland*,—*Corn, Cyder, Perry, Hops, Cattle, Salt, Lawn, Lace, Cambrick, Woollen Cloth, Leather, Gloves, Clocks, Watches, Hardware, Toys, Paper, Hats, and Glass*.—In the *South*, as in *Portugal, Spain, Italy, and Turkey*,—*Wine, Allom, Amber, Rice, Raisins, Oranges, Lemons, Marble, Cottons, Velvets, and Mobair*.

The **ISLANDS** of this Quarter are, in the *North*,—*Greenland*, famous for its *Whale Fishery*.—And *Iceland*, in which is the burning Mountain *Hecla*, supposed by its frequent Eruptions, to be the Cause of the *Northern Lights*; it belongs, with the little Isles of *Farro*, together with those of *Zealand and Funen, &c.* in the *Baltic*, to the Crown of *Denmark*.—Near *Great Britain*, are the *Sbetland Isles, the Western Isles, Orkneys, Man, Anglesea, Scilly, Wight, Jersey, Guernsey*, subject to the *English*.—On the *West*, are the *Azores*, Nine in Number, the Chief, *St. Michael; St. Maria, Terceira, and Graciosa*; the Trade is *Wine and Sugar*; and all belong to the King of *Portugal*.—In the *Mediterranean Sea* are *Ivica, Majorca, and Minorca*, belonging to *Spain*—and *Corfica*, belonging to the *French*.—*Sardinia*, a Kingdom of itself.——*Sicily*, belongs to the King of *Naples*, and in it is the burning Mountain *Etna*.—*Malta* belongs to its own Governor, called the *Grand Master*.—*Corfu, Cephalonia, and Zant*, are subject to the *Venetians*.—*Cyprus, Candia, Rhodes, Patmos*, and the Cluster of small ones in the *Archipelago*, belong to the *Turks*.

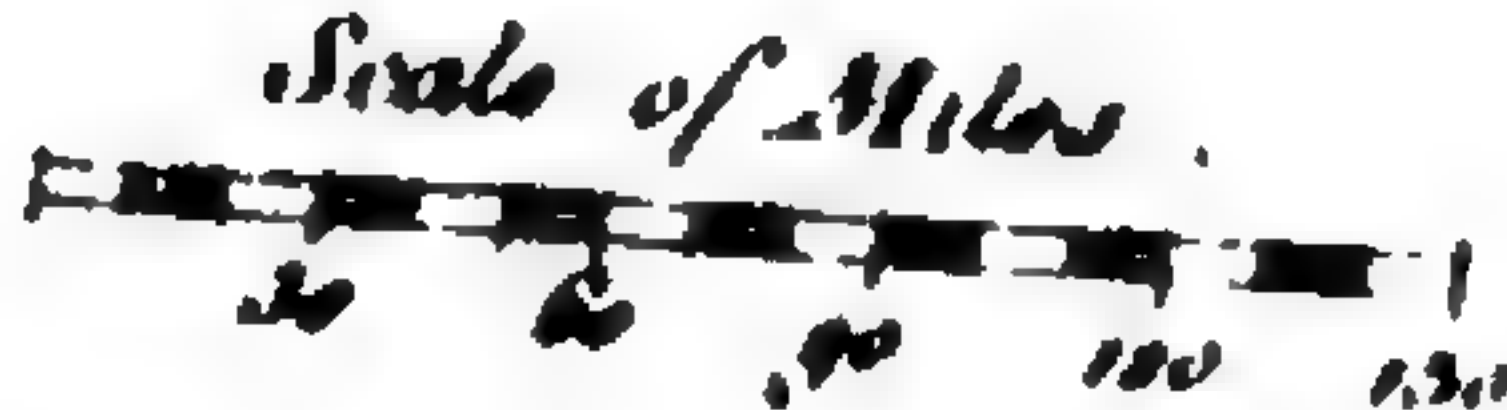
The principal **MOUNTAINS** in this Part of the World are the *Dolphrino Hills*, between *Sweden and Norway*; the *Hyperborean or Riphæian Mountains* in the *North Part of Muscovy*;—the *Caparthen Mountains* in the *South Part of Poland*;—the *Pyrenean Hills* between *Spain and France*;—the *Alps* between *Italy and Germany*;—the *Appenine Hills* dividing *Italy* into *East and West*;—*Vesuvius*, a remarkable burning Mountain near *Naples*;—the *Peak* in *England*;—*Plinlimmon* in *Wales*;—and *Grampian and Chevoit Hills* in *Scotland*.

In this Quarter, the most noted **RIVERS** are, the *Thames, Severn, and Humber*, in *England*; *Forth, Tay, and Tweed*, in *Scotland*;—*Shannon, Boyne, and Barrow*, in *Ireland*;—*Rhine, Elbe, and Oder*, in *Germany*;—*Weisel, Neester, and Neper*, in *Poland*;—*Tago and Duero* in *Portugal*;—the *Ebro and Guadalquivir* in *Spain*;—*Tiber and Po* in *Italy*; *Don, Walga, and Dwina*, in *Russia*;—*Seine, Loire, Rhone, and Garonne*, in *France*; and the *Danube*, which runs all through *Germany, Hungary, Turkey* in *Europe*, and empties itself into the *Black Sea*.

The greatest **CURIOSITY** in this Quarter is the *Whale Fishery*, among the *Fields of Ice*, which have been encreasing for *Ages* upon the *Coast of Greenland*. A *Whale* is usually 60 or 80 Feet long; affords from 60 to 100 Barrels of *Oil*, from his *Fat*; and 4 or 500 Pieces of *Whalebone*, which is taken from his *Jaws or Gills*. This Trade is chiefly carried on by the *English and Dutch*. One *Whale* is valued generally at 1000, or 1200l.

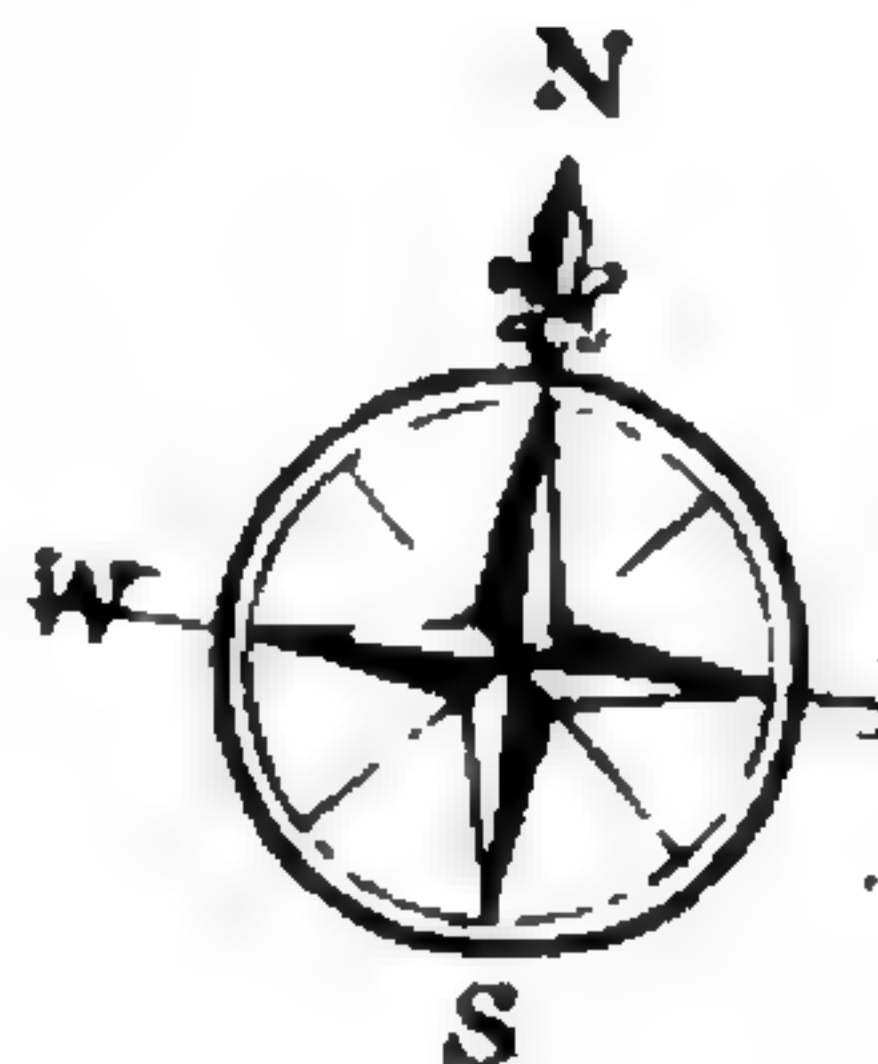


BRITISH
EMPIRE



WESTERN

OCEAN



Minutes after London 10 20 30 Minutes before London

THE BRITISH EMPIRE lies on the Western Part of *Europe*, and is wholly furrounded by the Sea: It contains—*Great Britain, Ireland*, and the *Iles* thereunto adjoining; as expressed in this Map.

Great Britain is in Length 630 Miles, but of different Breadths in different Places; is furrounded by the Sea, and contains *England, Scotland*, and *Wales*; being the largest Island in Europe.

England is parted on the *North* from *Scotland* by the Rivers *Tweed* and *Solway*; on the *East* it is washed by the *German Ocean*; on the *South* by the *Channel*; and on the *West* parted from *Wales* by a Line drawn from the Isle of *Anglesey* round *Flintshire*, by *Shropshire* and *Herefordshire*, down to the End of the River *Severn*.

England is about 360 Miles long, and 300 broad:—Contains 40 Counties: *Wales* is 124 Miles long, and 100 broad, and contains 12 Counties. The Name and Chief Town of each County, with its Distance from *London*, the Capital City,—the Number of *Parishes*, *Market Towns*, and *Members of Parliament* are expressed in the following Table.

Counties	Circ.	Mark. Towns	Par.	Mem. Par.	Chief Towns	Dist. f. Lond.	Counties	Circ.	Mark. Towns	Par.	Mem. Par.	Chief Towns	Dist. f. Lond.
Bedfordshire	73	10	116	4	Bedford	47	Rutlandshire	40	2	48	2	Okeham	94
Berkshire	120	12	140	9	Reading	39	Shropshire	135	17	170	14	Shrewsbury	155
Buckinghamshire	138	16	185	14	Buckingham	57	Somersetshire	204	35	385	18	Bristol	117
Cambridgeshire	130	9	163	8	Cambridge	51	Staffordshire	141	19	150	9	Stafford	125
Cheshire	112	13	68	4	Cheller	182	Suffolk	140	30	575	16	Ipswich	69
Cornwall	150	26	161	44	Launceston	210	Surry	112	13	140	14	Guildford	30
Cumberland	168	15	90	6	Carlisle	301	Sussex	158	17	312	28	Chichester	63
Derbyshire	130	11	106	4	Derby	126	Warwickshire	135	14	158	7	Warwick	93
Devonshire	200	39	394	26	Exeter	169	Westmoreland	120	8	26	4	Appleby	267
Dorsetshire	150	22	248	20	Dorchester	123	Wiltshire	140	22	304	34	Salisbury	80
Durham	107	9	118	4	Durham	256	Worcestershire	130	12	152	9	Worcester	112
Essex	146	27	415	8	Colchester	51	Yorkshire	320	56	563	30	York	197
Glocestershire	138	30	230	8	Glocester	104							
Hampshire	100	24	253	24	Southampton	76	NORTH WALES.						
Hertfordshire	130	20	120	6	Hertford	21	Anglesey	80	3	74	2	Beaumaris	241
Herefordshire	120	8	176	8	Hereford	132	Carnarvonshire	110	5	68	2	Carnarvon	251
Huntingdonshire	67	6	79	4	Huntingdon	57	Denbighshire	116	6	57	2	Denbigh	209
Kent	160	33	408	18	Canterbury	56	Flintshire	81	5	28	2	Flint	194
Lancashire	170	27	61	14	Lancaster	233	Merionethshire	105	3	37	1	Harlech	223
Leicestershire	96	12	192	4	Leicester	99	Montgomeryshire	94	5	47	2	Montgomery	161
Lincolnshire	180	35	630	12	Lincoln	135							
Middlesex	81	6	200	6	LONDON								
Monmouthshire	80	7	127	4	Monmouth	120	SOUTH WALES.						
Norfolk	140	32	660	12	Norwich	129	Brecknockshire	106	4	61	2	Brecknock	163
Northamptonshire	120	14	326	9	Northampton	66	Cardiganhire	94	5	77	2	Cardigan	224
Northumberland	160	13	460	8	Newcastle	270	Carmarthenshire	108	5	87	2	Carmarthen	208
Nottinghamshire	90	9	168	8	Nottingham	121	Glamorganshire	112	9	118	2	Cardiff	165
Oxfordshire	130	14	280	9	Oxford	53	Pembrokeshire	93	7	45	3	Pembroke	236
							Radnorshire	90	4	53	2	Radnor	150

The RIVERS of principal Note in *England* are—the *Thames, Severn, Trent, Humber, Medway, Ouse, Tine, Avon, Derwent, Mersey, &c.*—In *Wales*, the *Wye* and *Dee*.

The most noted HILLS in *England* are—the *Peak* in *Derbyshire*; *Malvern* in *Worcestershire*; *Mendip-Hills* in *Somersetshire*.—In *Wales*—*Snowden-Hills, Plinlimon*, and the *Black-Mountains*.

In *England* are 22 BISHOPRICKS; in *Wales* 4; which make in all 26 Bishops; of which 2 are *Arch-Bishops, Canterbury* and *York*. There are also in *England* 2 famous Universities—*Oxford* and *Cambridge*: The former of which contains 20 Colleges and 5 Halls; the latter contains 12 Colleges and 4 Halls.—In *Wales* there is no University.

The established RELIGION in *England* and *Wales* is *Lutheranism*. The *Inhabitants* are about 7 Millions in Number; of which almost 1 Million and a Half live in and about *London*.

SCOTLAND lies on the North of England, parted from it by the Rivers *Tweed* and *Salway*; and is about 300 Miles long and 150 broad. It is divided by the River *Tay*, which runs near the Middle of it, into 2 Parts;—*Highlands* and *Lowlands*, which contain 34 *Shires*, in which are many populous Towns and Villages, but the Capital City is *Edinburgh*, distant from London about 270 Miles North.

In the *Lowlands* (next England) are these 22 COUNTIES.—1. *Tiviotdale*, 2. *March*, 3. *Tweeddale*, 4. *Liddesdale*, 5. *Ebsdale*, 6. *Anandale*, 7. *Niddesdale*, 8. *Galloway*, 9. *Carrick*, 10. *Kyle*, 11. *Cunningham*, 12. *Arran*, 13. *Clydesdale*, 14. *Lenox*, 15. *Sterling*, 16. *Fife*, 17. *Strathern*, 18. *Menteith*, 19. *Argyle*, 20. *Cantire*, 21. *Lorne*, and 22. *Lothien*.

In the *Highlands* are these 13 COUNTIES.—1. *Lochabar*, 2. *Breadalbin*, 3. *Pertb*, 4. *Atbol*, 5. *Angus*, 6. *Merns*, 7. *Mar*, 8. *Buchan*, 9. *Murrey*, 10. *Refs*, 11. *Sutherland*, 12. *Caithness*, and 13. *Strathnaver*.

The Chief CITIES are the 4 Universities; viz. *Edinburgh*, *Aberdeen*, *Glasgow*, and *St. Andrews*.

The principal RIVERS in Scotland are the *Tweed*, *Clyde*, *Tay*, and *Spay*, all navigable; besides many *Lakes*, of which *Lemund* and *Nefs* are the most remarkable.

The MOUNTAINS of Note are the *Cheviot-Hills*, and those of *Albany*.

The established RELIGION here is the *Presbyterian*:—Consequently they have no *Bishops*.—The *Inhabitants* about 2 Millions.

IRELAND lies West of England, is wholly surrounded by the Sea, and parted from *Great Britain* by *St. George's Channel*, which in some Places is 60 Miles over, in others not so much as 20. *Ireland* is in Length about 300 Miles, in Breadth about 150. 'Tis usually divided into 4 Provinces—*Linster*, *Munster*, *Connaught*, and *Ulster*, which contain 32 Counties, in which are several Cities and populous Towns; but the Capital is *Dublin*, about 250 Miles North West of London.

In LINSTER are 12 Counties—1. *East-Meath*, 2. *West-Meath*, 3. *Louth*, 4. *Longford*, 5. *Kings-County*, 6. *Queens-County*, 7. *Catherlogh*, 8. *Kilkenny*, 9. *Kildare*, 10. *Waxford*, 11. *Wicklow*, and 12. *Dublin*.

In MUNSTER are 5 Counties—1. *Cork*, 2. *Kerry*, 3. *Limerick*, 4. *Tipperary*, and 5. *Waterford*.

In CONNAUGHT are 6 Counties—1. *Sligo*, 2. *Letrim*, 3. *Roscommon*, 4. *Galway*, 5. *Mayo*, and 6. *Clare*.

In ULSTER are 9 Counties—1. *Antrim*, 2. *Down*, 3. *Armagh*, 4. *Cavan*, 5. *Londonderry*, 6. *Donnegal*, 7. *Fermanagh*, 8. *Tyrone*, and 9. *Monaghan*.

Their noted CITIES besides *Dublin*, are *Limerick*, *Waterford*, *Kinsale*, *Cork*, *Atblone*, *Galloway*, *Londonderry*, &c. They have 4 Arch-Bishops, viz. *Armagh*, *Dublin*, *Cathel*, and *Tuam*; and 18 Bishopricks.—*Dublin* is their only University, and is one of the largest and finest Cities in Europe.

The most noted RIVERS here are the *Shannon*, *Barrow*, *Saver*, *Fern*, *Nash*, and *Blackwater*.—The Country abounds in *Lakes*, but the chief are—*Lough-Earn*, *Lough-Neagh*, and *Lough-Corrib*.

The chief MOUNTAINS are *Knock-Patrick*, *Slew-Blerry*, and *Carlew-Hills*.

The RELIGION established here is *Lutheranism* as in England; but the *Inhabitants* professing *Papery* are more than 3 Parts in 4 of the whole Kingdom. The *People* are about 2 Millions and a Half.

The ISLANDS round Great-Britain are the *Shetland* and *Orkneys* North of Scotland; they are many but small, the chief *Maithland* and *Pomona*.—The *Western Islands*, *Lewis*, *Sir. Mull*, *Isl.*, *Jura*, *Isl.*, *Arran*, and *Bute*—In the *Irish Channel* are *Man* and *Anguier*.—In the *English Channel* are *Wight*, *Jersey*, *Guernsey*, *Sark*, and *Alderney*. And at the Lands End are the little, but dangerous Isles of *Silly*.



ASIA lies East of Europe, is about 4800 Miles *long*, and 4300 *broad*, bounded on the *North* by the Frozen Ocean, by the Pacific on the *East*, by the Red Sea on the *West*, and the Indian Ocean on the *South*. This, though the Second, is yet the *principal* Quarter of the Globe; for here our *first Parents* were created, and placed in the Garden of *Eden*; here once stood the famous *Tower of Babel**. In this Country our Saviour was born, and compleated our Redemption. *This* was, in short, the Theatre of almost every Action recorded in the sacred Scriptures. It is divided into many principal *Regions*, whose *Names*, *Extent*, chief *Cities*, &c. are as under.

	Nations.	Length	Breadth	Chief City.	Dist. & Bear- from London	Dist. or Time fr. London.	Religions.
Tartary.	Russian	The Bounds of these Parts are unlimited, each Power pushing on his Conquests as far as he can.		Tobolskoi	2160 N. E.	4 10 bef.	Christians & Pagans
	Chinese			Chynian	4480 N. E.	8 4 bef.	Pagans
	Mogulean			Tibet	3780 E.	5 40 bef.	Pagans
	Independant			Samercand	2800 E.	4 36 bef.	Pagans
Turkey in Asia.	China	1440	1000	Pekin	4320 N. E.	7 24 bef.	Pagans
	Moguls	2000	1500	Delly	3720 E.	5 16 bef.	Mahomet. & Pagans
	India	2000	1000	Siam or Pegu	5040 E.	6 44 bef.	Pagans
	Persia	1600	1200	Isfahan	2460 E.	3 20 bef.	Mahometans
	Arabia	1300	1200	Meccha	2640 S. E.	2 52 bef.	Mahometans
	Syria	270	160	Aleppo	1860 E.	2 30 bef.	Christ. & Mahomet.
	Holy Land	210	90	Jerusalem	1920 S. E.	2 24 bef.	Christ. & Mahomet.
	Natolia	750	308	Bursa or Smyrna	1440 S. E.	1 48 bef.	Mahometans
	Diarbick or Mesopotamia	560	310	Bagdad	2160 E.	2 56 bef.	Mahometans, with some few Christians.
	Turcomonia	360	300	Erzerum	1860 E.	2 44 bef.	
	Georgia	* * *	* * *	Tesslis	1020 E.	3 10 bef.	

The *Turks*, *Persians*, *Moguls*, and *Chinese*, are of good Shape and Complexion: The *Men* wear *Turbants*, *Vests*, and *Slippers*; the *Women* dress much like the *Men*, only they wear a stiffened Cap like a *Mitre*, and their Hair down. The *Mogul Ladies* are fond of *Bracelets* on their Arms and Legs; *Rings* on their Fingers and Toes, *Jewels* in their Noses, and *Pendants* in their Ears: and the *Chinese Ladies* are remarkable for their *little Feet*; and the *Gentlemen* for *long Nails*. In *Siam*, *Pegu*, &c. the Inhabitants are *Tawney*, and Features *coarse*. The *Men* wear a Piece of Cloth wrapped round their Waist, and pull their *Beards* (as the *Chinese* and *Tartars* do) up by the Root. The *Women* have, besides the Piece about their Waist, another thrown round their *Breasts* and *Shoulders*, leaving the rest of the Body *bare*. The *Common People* near the Sea go almost *naked*.

* In this Quarter stood the Temple of *D'ana*, at Ephesus in Natolia, burnt the Night Alexander the Great was born. Near to that stood the famous City *Troy*, totally destroyed by the Greeks, 1200 Years before Christ. Here also stood the seven *Churches* mentioned by St. John in the Revelations. — Also *Tyre* and *Sydon*, on the Coast of the Holy Land, once vast Cities of Trade, but now the Habitation of a few *Fishermen*. — Likewise *Salem* and *Gomorrab*, large Cities destroyed by Fire from Heaven for their Wickedness. — Also *Nineveh* and *Babylon*, great Cities in *Mesopotamia*, near *Bagdad*, now the Habitation of only *Owls*, *Tigers*, *Serpents*, and *Bats*. In the Holy Land stood the famous City and Temple of *Jerusalem*, destroyed by *Jessafar* about 70 Years after Christ.

The TRADE of these Parts in Tartary is in *Sables, Martins, Furs, Iron, &c.*—In the other *Parts, Silk, Garçè, Scorses, Carpets, Tapestry, Mohair, Musk, Cinnamon, Aloes, Rhubarb, Ginseng, Myrrh, Camphire, Coffee, Incense, Manna, Spices, Nutmegs, Tea, Drugs, Gold Dust, Quicksilver, Diamonds,* and fine *China, Laquered and Japan Ware.*

In this Quarter are also *Camels, Dromedaries, Buffaloes, Elephants, Lions, Tygers, Serpents, Locusts, Scorpions, Ora-Ootans* and *Chimpanzeys*, which are Animals almost as big as a Man, and greatly resemble the *Human Shape.*

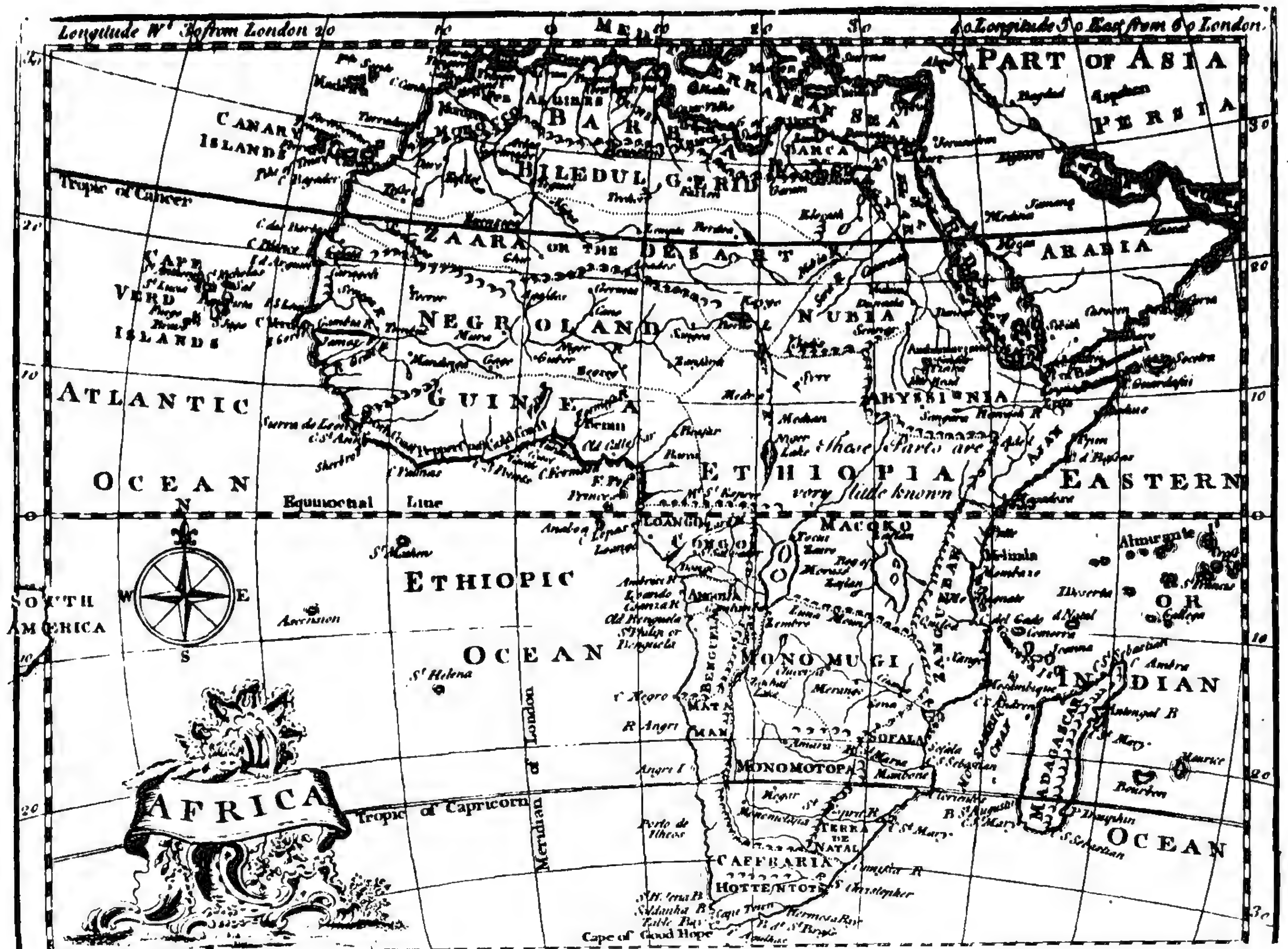
The ISLANDS in *Asia* are those of *Japon*, as *Japon* itself, *Tonsa* and *Bongo*,—also *Formosa*,—the *Baskee* Isles, very small,—*Aynan* and *Macco*.—The *Ladrone* Isles, the chief *Guam* and *Tinian*.—The *Phillippine* Isles 11,000 in Number, chiefly small ones; the principal are *Luconia, Mindanao,* and *Tendayes*.—The *Moluccas* or *Clove* Islands, the chief *Gilolo, Ceram, Macassar, Amboyna,* and *Banda*, where the *Nutmegs* grow.—The *Sunda* Isles, *Borneo, Java,* and *Sumatra, &c.*—The *Andaman* and *Nicobar* Isles, all small.—The *Maldives*, many Thousands very small, in the Indian Sea,—and *Ceylon*, or fine *Cinnamon* Isle, near the Coast of *Coromandel.*

Most of these Islands lying near or *under* the *Line*, afford great Quantities of *Sugar* and *Spice*, which the *Dutch* trade with to all Parts of the World. The Inhabitants, who are of a Tawney or Olive Colour, and go almost naked, use Bows and *poisoned Arrows*, are superstitious and gross Idolaters; and in some Places (it is said) offer their *Children* in *Sacrifices* to their *Idol Gods.*

The principal RIVERS in this Quarter are the *Tigris* and *Euphrates*, between *Arabia* and *Persia*.—*Tobol* and *Oby* in *Tartary*.—*Indus* in the *Mogul's* Empire.—*Ganges* in *India*,—the *Hoambo* or *Yellow* River in the North; and the River *Tay*, that runs by *Canton*, in the South of *China.*

The chief MOUNTAINS here are *Ararat*, near the *Caspian* Sea, on which the *Ark* rested after the Flood.—*Horeb* and *Sinai* in *Arabia*.—*Lebanon* in the Holy Land.—Mount *Taurus* running from East to West of all *Asia*.—*Imaus* in *Tartary*.—*Caucassus* between *Tartary* and the Great *Mogul's* Empire,—and the *Naugracut* Mountains in *Tibet.*

In this Quarter one great CURIOSITY is, the vast Brick Wall in *China*, 1500 Miles long, 30 Feet high, and broad enough for 8 Persons to ride abreast, fortified with a square Tower, at the Distance of every Mile: It was built about 1500 Years ago to keep out the roving *Tartars*, and it is at this Time very little decayed.—Another *Curiosity* is the wonderful *Tallow Tree*, which bears a Fruit, whose Kernel has all the Properties of Tallow, and of that the *Chinese* are said to make their *Candles.*



AFRICA is the third Quarter, situated to the South of *Europe*, and surrounded on all Sides by the Sea, except a narrow Neck of Land about 60 Miles over (called the Isthmus of *Suez*) which joins it to *Asia*, at the Top of the *Red Sea*. This Country is about 4300 Miles *long*, and 4200 *broad*, and lies chiefly in the *Torrid Zone*; the *Equator* running through the *Middle* of it. Here once dwelt the Queen of *Sheba*, who, on paying a Visit to the Magnificent King *Solomon*, stood amazed at the Wisdom and Glories of his Court. Here we find a Race of People quite **BLACK**, having flat Noses, thick Lips, and Hair like *Wool**. This *Quarter* is generally *divided* as under.

	Nations.	Length.	Breadth	Chief City.	Dist. & Bearing from London.	Diff. of Time from London.	Religions.
Barbary.	Morocco	500	480	Fez	1080 S.	0 24 aft.	Mahometans
	Algiers	420	400	Algiers	920 S.	0 13 bef.	Mahometans
	Tunis	400	250	Tunis	990 S. E.	0 39 bef.	Mahometans
	Tripoli	700	240	Tripoli	1260 S. E.	0 56 bef.	Mahometans
	Barca	400	300	Tolemeta	1440 S. E.	1 26 bef.	Mahometans
	Egypt	600	250	Grand Cairo	1920 S. E.	2 12 bef.	Mahometans
	Bilidulgerid	2500	350	Dara	1565 S.	0 32 aft.	Pagans
	Zaara	2400	660	Tegessa	1840 S.	0 24 aft.	Pagans
	Negroland	2200	840	Madinga	2500 S.	0 38 aft.	Pagans
	Guinea	1800	360	Benin	2700 S.	0 20 bef.	Pagans
Up. Ethiopia.	Nubia	940	600	Nubia	2418 S. E.	2 12 bef.	Mahom. & Pag.
	Abyssinia	900	800	Gondar	2880 S. E.	2 20 bef.	Christians
	Abex	540	130	Doncala	3580 S. E.	2 36 bef.	Chris. & Pagans
The <i>Minute Parts</i> , called <i>Lower Ethiopia</i> , are very little known to the Europeans.							
Lower Guinea.	Loango	410	300	Loango	3300 S.	0 44 bef.	Chris. & Pagans
	Congo	540	420	St. Salvador	3480 S.	1 0 bef.	Chris. & Pagans
	Angola	360	250	Loando	3750 S.	0 58 bef.	Chris. & Pagans
	Benguela	430	180	Benguela	3900 S.	0 58 bef.	Pagans
	Mataman	450	240	No Towns	* * *	* * *	Pagans
	Ajan	900	300	Brava	3702 S. E.	2 40 bef.	Pagans
	Zanguebar	1400	350	Melinda or Mozambique	4440 S. E.	2 38 bef.	Pagans
	Monomotapa	960	660	Monomotapa	4500 S.	1 18 bef.	Pagans
	Monemugi	900	660	Chicova	4260 S.	1 44 bef.	Pagans
	Sofola	480	300	Sofola	4600 S. E.	2 18 bef.	Pagans
	Terra de Nat.	600	350	No Towns	* * *	* * *	Pagans
	Caffaria or Hottentots	780	660	Cape of Good Hope	5200 S.	1 4 bef.	Most stupid Pagans.

* Some Writers have supposed these People to be the Descendants of *Cain*; who for his Cruelty to his Brother, has that Mark set upon him.—Others have esteemed them to be a *different Species* of Beings, and therefore ranked them a *Link Lower* than us in the *Chain of Existence*:—whilst many have attributed that *dusky Hue* to the *Nature* of their *Diet*, and intense *Heat* of the Country.

Along the *Coasts* of the *Mediterranean*, in *Egypt*, *Bilidulgerid*, and *Zaara*, the People are of a *tawney* Complexion, and dress like the *Turks*; but in all *other Parts* of this Quarter, the Inhabitants are **BLACK**. The better Sort of *Negroes* wear thin Vests and white Caps, but the Poor go almost **NAKED**, having only a small Piece of Skin, or coarse Stuff wrapped about their Waist. The poor *Hottentots*, daubed over with *Grease* and *Soot*, and having their *Arms*, *Legs*, and *Neck* wrapped round with the *raw Guts* of Beasts, make a most despicable and *naughty* Appearance.

Through *Barbary*, *Nubia*, and *Egypt*, the **COMMODITIES** are *Rice*, *Figs*, *Raisins*, *Oranges*, *Lemons*, *Citrons*, *Almonds*, *Pomegranates*, *Olives*, *Senna*, *Dates*, *Leathers*, *Civet*, *Sugar*, and *Indigo*.—In *Negroland* and *Guinea*,—*Ostriches Feathers*, *Gold-Dust*, *Elephants-Teeth*, *Pepper*, and *Slaves*, which are chiefly purchased by the *English*, and transported to America.—The *Inland* Countries are said to be full of *Lions*, *Tygers*, *Monkeys*, *Rhinoceroses*, and *Crocodiles*: The Natives are little known. To the *South*, along the *Coast*, the *Traffick* is *Ambergrease*, *Musk*, *Civet*, *Lemons*, *Millet*, *Pearls*, *Gold-Dust*, &c. chiefly carried on by the *Dutch* and *Portuguese*; the former of which have a large Settlement at the *Cape of Good Hope*, and the latter many on the *Eastern* and *Western* Sides of the Continent.

The **ISLANDS** of this Quarter are, *Madagascar*, the largest; the Inhabitants *black*, *wild*, *savage*, *naked*, and under no particular Governor. The Islands of *Cape Verde*, 10 in Number. *St. Vincent*, *St. Nicholas*, *Lucia*, *Antonia*, *Sal*, *Bonavista*, *Jago*, *Mayo*, *Bravo*, and *Fuego*, all subject to the *Portuguese*.—The *Canary* Islands, 14 in Number, the chief, *Teneriff*, *Ferro*, and *Canary*, belong to the Crown of *Spain*.—The *Madeira*, noted for *excellent Wine*, subject to the *Portuguese*.—The *Guinea Isles*, as *Princes*, *Po*, *Annsbon*, *Thomas*, *Matthew*, &c. belong to the *Portuguese*. And the *Isles Ascension* and *St. Hellen*, belong to the *English*.

The principal **MOUNTAINS** here are, the *Lybian* Mount, between *Zaara* and *Egypt*;—Mount *Atlas*, between *Barbary* and *Bilidulgerid*, which gives Name to the neighbouring Ocean, called the *Atlantic* Ocean.—The Mountains of *the Moon* in *Ethiopia*, near the Empire of *Menemugi*.—And the *Pico* or *Peak* in *Teneriff*, one of the *Canary Isles*, in Form of a Sugar Loaf, supposed to be the highest in the World, and may be seen 40 *Leagues* distant.

The most noted **RIVERS** here are, the *Nile* in *Nubia* and *Egypt*:—The *Niger* running through all *Negroland*:—The *Gambia* and *Senegal*, on which the *English* and *French* have some Settlements, are only Branches of the *Niger*.

The principal **CURIOSITIES** in Africa are, the vast *Pyramids* in *Egypt*, three Miles West of *Cairo*, supposed to be built by the Children of *Israel*, when in Bondage, for Sepulchres for the *Egyptian* Kings.—Also, the *Mummy Pits* near the *Pyramids*, in which are found the Bodies of People, embalmed and buried 3000 Years ago, yet perfect and distinct at this Day.



AMERICA is the last Quarter of the World: It lies about 2300 Miles West of *England*,* and is of vast Extent. Bounded on the *North* by unknown Parts, by the Atlantic Ocean on the *East*, by the great South Sea on the *South* and *West*. 'Tis 8 or 9 thousand Miles in *Length*, and about 3 thousand in *Breadth*. It was discovered first by *Christopher Columbus*, with a *Spanish* Fleet, in *October* 1492, but more fully by *Americus Vesputius* in 1497, and from him takes its Name.—It is often called the *West Indies*, in Contradistinction to the farther Parts of *Asia*, stiled the *East Indies*, discovered by the *Portuguese* a little before; both which Countries were unknown to the *Europeans* till that Time. *Nature* seems to have divided it into *two* Parts, *North* and *South*, by a narrow Neck of Land, called the *Isthmus of Darien*, or *Panama*, which in some Places is not more than 30 Miles over*.

NORTH AMERICA is divided into these following Parts.

Nations.	Length.	Breadth.	Chief City.	Dist. & Bearing from London.	Diff. of Time from London.	Belongs to
Mexico, or New Spain	2000	600	Mexico	4900 N. W.	6 50 aft	Spain
Granada, or New Mexico	Bounds undetermined.		St. Fee	4320 N. W.	7 0 aft.	Spain
California	Bounds undetermined.		St. Juan			Spain
Florida East and West.	480	360	St. Augustine	3960 W.	5 24 aft.	England, now ceded to Spain
Canada	1800	1260	Quebec	2760 N. W.	4 56 aft.	England
Louisiana	1400	1000	Fort Louis	4080 N. W.	6 4 aft.	Spain
British Colonies	1383	300	Boston	2760 W.	4 40 aft.	England, now free States.
Nova Scotia	350	250	Hallifax	2580 W.	4 13 aft.	England

The North Part of the Continent is very little known, and still claimed by the *English*. The chief Places are *Rupert's Fort*, in *Estimaux*, or *New Britain*—*Port Nelson* and *Churchill* in *New North Wales*—and *New Severn*, and *Albany*, in *New South Wales*.

The *British* Colonies—now the Free States of *North America*, are *New England*, containing 4 Provinces, the chief Town *Boston*.—*New York*, the chief Town *New York*.—*New Jersey*, the chief Town *Elizabeth Town*.—*Pensylvania*, the chief Town *Philadelphia*.—*Delaware*, chief Town *Newcastle*.—*Maryland*, chief Town *Baltimore*.—*Virginia*, the chief Town *James Town*.—*Carolina*, the chief Town *Charles Town*.—And *Georgia*, whose chief Town is the *Savannah*; making in all 13 Provinces.

* If this *Isthmus* were cut through to make a safe Passage for Ships into the opposite Seas; and also a like Cut made across the *Isthmus* of *Suez*, at the End of the *Mediterranean*, to open a Communication with the *Red Sea*, vast Advantages would be derived from thence to the Trading World, and the great Voyage round the Globe would become not only much shorter, but safer than at present.

The INDIANS here are generally of a *brown* Complexion; the few that are *white*, stain themselves of a *copper* or *red* Colour, and some with Streaks of *blue*. They are dexterous with their *Bows* and *Arrows*; and very fond of adorning themselves with Strings of *Beads* and *Shells* about their Necks, and *Rings* and *Plates* in their Ears and Noses, and pull their *Beards* up by the Roots. They go *naked* in the Summer, but in the Winter cover themselves with the *Skins* of Beasts taken in hunting, which is their chief Employ. The *Mexicans* are civil and docile, the rest savage and cruel; they *scalp* their Prisoners, and sometimes (it is said) *broil* and *eat* them. They are gross Idolaters, and worship the *Sun* and *Stars*.

Note; the *Religion*, *Language*, and *Dress* of the several *Colonies* in *America*, are the same of the *European Nations* they belong to.

The COMMODITIES here are, *Cotton*, *Silk*, *Skins*, *Furs*, *Feathers*, *Cochineal*, *Logwood*, *Mahogany*, *Tobacco*, *Iron*, *Pine-Apples*, *Sugar*, and several Sorts of *Drugs*.

The chief ISLANDS are, *Newfoundland*, belonging to the *English*, famous for its Fishery.—*Bermudas* or *Summer Isles*, are the Property of *Great Britain*.—*Cape Breton*, *Anticosti*, and *St. John's*, belong to the *English*.—The *Babama Isles*, (many in Number, but *Providence* only inhabited) belong to the *English*.—The *Antilles*, as *Cuba*, *Hispaniola*, and *Porto Rico*, belong to *Spain*, and *Jamaica* to the *English*.—The *Caribbee Isles*, the chief *St. Christophers*, *Anguila*, *Antigua*, *Barbadoes*, belong to the *English*.—*St. Martin*, *Bartolomew*, *Dejeado*, *Guadaloupe*, *Marigalante*, *Martinico*, and *Granada*, belong to the *French*.—*Eustatia* and *Saba* belong to the *Dutch*,—and *St. Thomas* to the *Danes*.—These Islands produce vast Quantities of *Sugar*, (in planting of which *Thousands* of *Negroes* are employed) *Tobacco*, *Pepper*, *Yams*, *Indigo*, *Ginger*, *Gums*, *Dying-woods*, *Cocoa*, *Cotton*, *Parrots*, *Fish*, *Turtles*, and *Lignum Vitæ*.

The chief MOUNTAINS here are, the *Apalachean* between *Carolina* and *Louisiana*. But in the *North* are vast unknown *Mountains* perpetually covered with *Snow*, from whence the Winds blowing the greatest Part of the Year, these Countries become much colder than those in *Europe* in the same Latitude.

The most remarkable RIVERS are, *St. Laurence*, dividing the *English* Plantations from *Canada*.—The *Mississippi*, and the *Ohio*, in *Louisiana*,—and the River *North* in *New Mexico*, both which last empty themselves into the *Gulf of Mexico*.

Things most curious in this Part, are the prodigious *Falls of Water* near *Niagara*: Also the *Cabbage-Tree* 100 Feet high, with no Branches but at the Top.—The *Calabash*, which grows like a large Gourd, of which, cut into different Sizes, they make their *Dishes*, *Pails*, &c.—And the *Cassavi Root*, of which the *Indians* usually make their *Bread*.



In SOUTH AMERICA are the following Nations.

Nations.	Length	Breadth	Chief City	Dist. & bearing from London.	Diff. of Time from London.	Belongs to
Terra Firma	1400	700	Panama	4650 W.	5 28 aft.	Spain
Peru	2000	600	Lima	5520 S. W.	5 4 aft.	Spain
Amazons, a very large Country, but little known to the Europeans, 1200 Long, 960 Broad.						
Guiana	780	490	{ Surinam } { Cayenne }	3840 S. W.	3 44 aft.	Dutch and French
Brazil	2000	700	St. Salvador	6000 S. W.	3 44 aft.	Portugal
Paraguay	1500	1100	Assumption	5640 S. W.	3 52 aft.	Spain & the Jesuits
Chili	1200	600	St. Jago	6600 S. W.	5 6 aft.	Spain
Terra Magellanica, or Patagonia.	} The Spaniards took Possession of it, but did not think it worth while to settle there.					

The COMMODITIES of this Country are Gold, (which in *Peru* was once as plenty as Stones in the Street) *Silver*, *Pearls*, *Tobacco*, *Cochineal*, *Emeralds*, *Jaspers*, *Amethysts*, *Ebony*, *Cocoa Nuts*, *Pine Apples*, *Brazil Wood*, *Jesuits Bark*, *Amber*, *Rosin*, *Balsam*, *Ostriches Feathers*, *Maize*, and several Sorts of Gums and Drugs.

The INDIANS are generally of a good Size, and well made : Down to the Tropic of *Capricorn* they are of a *Brown* or *Copper* Complexion, but farther on tolerably fair. They have little Idea of God, or Religion ; are very superstitious, and the grossest Idolaters. They have many odd Customs ; go for the most Part *naked*, but paint themselves of various Colours, red, blue, and yellow ; many of them wear large Rings in their Ears, Chains of Shells about their Necks, and glittering Stones or Plates on their Lip and Noses, permitting no Hair to grow upon their Chins. They use *Bows* and *Arrows*, stroll about, and live by Fishing and Hunting, as they do in the *Northern Parts*. Some of the Natives are said to be *Cannibals*, and worship the *Devil*.

The ISLANDS here are, *St. Catherines* and *Trinidad*, off the Coast of *Brazil*—*Chiloe* and *Juan Fernandes*, near *Chili*,—and the large Island *Terra del Fuego*, (so called on Account of its terrible *Volcanoes* or burning Mountains) at the South of *Magellanica* ; these all belong to *Spain*.—But *Falkland* Island is claimed by the *English*.—There are many more *Islands* scattered about the Great South Sea, but all are thinly inhabited, and of no great Account.

The chief MOUNTAINS are, *St. Martha* in *Terra Firma*:—The *Andees*, which are said to be the highest in the World :—Their Tops are always covered with Snow ; and the Cold is so intense, that Numbers have perished in attempting to go over them ; and others have lost their Fingers and Toes, and been lamed for ever. No Beast of any Kind is found upon them. They run through the whole Length of *South America*.

The most remarkable RIVERS are, *Oronoko*, in *Terra Firma*, where the South Sea Trade begins ;—the vast River *Amazon* in *Amazonia*, and *Rio de la Plata*, or the River Plate, in *Paraguay*.

Of the less-known P A R T S of the W O R L D.

IN the *North*, near the Pole, are, *Nova Zembla*, an Island—*Greenland* or *Spitsbergen*, an Island—and *Greenland*, on the *Continent*. The Inhabitants very few, and those savage, low in Stature, and of a disagreeable Look, something resembling a Bear. They live upon the Flesh of *Whales*, *Bears*, *Foxes*, *Rain-Deers*, and go muffled up in Skins, the hairy Side next their Bodies. The *Sun* does not appear in these Parts for 3 or 4 Months together in the Winter, and then the *Cold* is sometimes so intense as to freeze *Brandy*. And in the Summer, he shines as many Months continually upon them, which makes the *Heat* as troublesome. Here also lie—*New Britain*—*New North Wales*—*New Denmark*, &c. in *America*—and *Yejdo*, *Kamchatka*, and a few small Islands adjoining, in *Asia*, all very little known.

Near the *Molucca Isles* in *Asia* are, *New Britain*, *New Ireland*, and *Louijade*; and under them, the large Island *New Holland*, almost as big as *Europe*. The Inhabitants very few, black, and quite naked.

A little further Eastward is *New Zealand*, consisting of two Islands, almost as large as Great Britain. The Northern one is very proper for the Reception of a New Colony from this Country: The Inhabitants here are but few, and nearly our *Antipodes*.

Within the *Tropics*, to the North of New Zealand, we meet with the *New Hebrides*, many considerable Islands.—Further on towards America are the *Friendly Islands*, many but small ones.—Beyond these, are the *Society Isles*, 7 or 8 in Number; the Chief *Otabiti*, about 90 Miles in Circumference.—Above these are the *Marquesas* or *Quiros*, 5 in Number, all small ones;—and beyond, about half-way to America, is *Easter Island*, very small, and Inhabitants few.

Above the *Society Islands*, near the Tropic of Cancer, are the *Sandwich Isles*, in Number 11; the largest *Oxybee*, where Capt. Cook, who lately discovered them, was unfortunately killed by the wild Inhabitants.

When, and by what Means these several Islands became inhabited, is not easy to determine: But one Thing is pretty certain, that the Inhabitants seem all to be derived from the same Source, as the same Language, and nearly the same Customs prevail at all of them. The Inhabitants are generally very brown; and cover some Part of their Bodies with a Sort of Matting made with the Bark of Trees. Their *Edge-Tools* are made of a hard Kind of Stone; and they are very fond of marking their Bodies and Faces in Variety of Shapes with *black* inserted into the Skin, which is called *Tattooing*. The only Animals found among all these Islands are *Dogs*, *Hogs*, and *Rats*, which, besides Fish and Roots, are the customary Food of the Inhabitants.

If there be any considerable Track of Land about the *South Pole*, it is so wholly surrounded with Fields and Mountains of Ice, that it is impossible to arrive at it. It is therefore very reasonable to believe that there can be no Inhabitants beyond those Parts of the Globe already discovered.

Of the TRADE WINDS.

I Cannot conclude without observing the wonderful *Phænomenon* of the *Trade Winds*; I mean such Winds as always blow from one and the same Quarter of the Globe. They are represented in the Maps by the *Shades* in, and about the *Torrid Zone*, and their *Direction* is constantly the Way the little *Arrows* seem directed. In the *Ethiopic*, *Atlantic* and *Pacific* Oceans (to 30 Degrees from the *Equinoctial* Line) they are continually found to blow towards the *West*; but in the Bay of *Bengal*, *Arabian*, *Chinese*, and *Indian* Seas, the Winds *vary*, blowing one Half of the Year *one* Way, and the other the *contrary*; i. e. in the *Summer* they blow to the N. E. but in the *Winter* to the S. W. These are called the *periodical* Trade Winds, and by the Sailors *Monsoons**. As the *Arrows* point their *Course*, so the Times of shifting are denoted by the *Months* thereto annexed. All *Ships* which trade in these Parts are obliged to observe the wonted Seasons; by *that* Means, they never fail of a *fair Wind* to waft them to the wish'd-for Port, and another to return them *to the Haven where they would be*.

* At the *Changing* or *Breaking* up of the *Monsoons*, which happens about *March* and *September*, there are dreadful Storms of *Wind*, *Thunder*, and *Rain*; which, agitating the *Atmosphere* to great Distances, are perhaps the *Cause* why these Months are so *Windy* in *this Part* of the World.—From 30 Degrees towards the Poles, the Winds are *variable*, though they blow from the *West* oftener than any other Point.

Of the CHANGES that have happened to the SURFACE of the EARTH.

THE former Description of the Earth is a true Figure of its Surface at this Day; but it has not always been the same from its first Formation, as is evident from ancient Accounts. For, we find that *large Tracts of Land* in some Places have been sunk down by *Earthquakes*, *Volcanos*, &c. into the Sea, and become great Lakes of Water; and, in other Places, where was only Water, Lands have risen from the Bottom of the Sea, and carried up their Productions of *Vegetables*, *Fish*, and *Shells*, and are now cultivated as common Lands. Other Changes also have happened through *Inundations*, *great Rains*, *meltings of Snow*, and the *Rapidity of Rivers*, carrying down with them much Earth and Sand, which settling on the shallow *Sea Shores*, have extended the Limits of those Shores further into the Sea. Thus, Places, which once stood on the very Shores, have after many Ages been found standing at a great Distance from the Sea; and the intermediate Space, which was once Sea, is become cultivated Ground. Again, the Sea, by its constant Motion, and by the Violence with which it is forced by the Winds against some Lands, hath by Degrees washed the Parts away, and the Sea by that Means hath now reached Places, which formerly stood a considerable Distance from the Shore. These Alterations and Changes of the Earth's Surface are continually, tho' slowly, taking Place. Hence some Countries are found to be increasing, whilst others are diminishing their Dimensions.

THE

THE

EXPLANATION and USE

OF THE

MAPS.

THE Map of the WORLD at the Beginning of the Book, represents the Globe, taken out of its Horizon, squeezed flat, cut through, and turned up again. The Hemisphere on the Right Hand contains *Europe, Asia, and Africa*; that on the Left, *North and South America*. The Circles bounding the Projection represent the Brass Meridian. The Top and Bottom are the *North and South Poles*; and the *Curve Lines* uniting there, are the other *Meridians* upon the Globe. The *Equator* is the Strait Line running across the Meridians exactly in the Middle. The *Tropics* and *Polar Circles* are delineated at their proper Distances on each Side towards the North and South; and the *Ecliptic* is the *Serpentine Line*, one Half of which bends upwards from the Equator to the Tropic of Cancer, and the other Half downwards to the Tropic of Capricorn. If you turn your Eye to the Map, you will find all the *Lines*, and the several *Countries*, described in their proper Distances and Situation, just as upon the Globe itself; and which View will give you a better *Idea* than all the verbal Descriptions in the World.

The other Maps, *viz.* of *Europe, Asia, Africa*, and of *North and South America*, which are bordered with a *Square*, are only Parts of a larger Projection, in order to exhibit each particular Country, and its contiguous States more *distinctly*. The Top is always the *North*; the Bottom the *South*; the Right Hand *East*; the Left Hand *West*; when 'tis otherwise, there is always a *Compass* annexed to point the Contrary. The Lines running from Top to Bottom are *Part* of the *Meridians*; and those from Side to Side are *Parallels* of *Latitude*, which are generally drawn 10 Degrees distant, or 600 Miles asunder from each other.

Maps are used not only to exhibit the true *Shape* of *Countries*, but also, the *Longitude* and *Latitude* of Places, and their *Distances* and *Bearing*, or Situation from one another.

(1st,) To find the LATITUDE of any Place.

Look the Place; then run with a Pencil, or your Finger, to either the Right or Left-hand-side, keeping the same Distance between the Lines above and below it, and the Degree you meet with there, is the *Latitude* required.

Thus, the Latitude of *London* you will find to be about 51 and 1-half, and Latitude of *Dublin* 53 Degrees.

(2d,)

(2d,) To find the LONGITUDE of any Place.

Only run your Pencil or Finger from it, to the Top or Bottom of the Map, and the Degree against it is the Longitude required.

Thus the Longitude of *Rome* is about 13 Degrees to the East; and *Lisbon* about 9 to the West.

(3rd,) The LONGITUDE and LATITUDE being given, to find the Place.

Look the Longitude at the Top or Bottom; and the Latitude on the Right or Left-Hand, then run your Fingers across the Map till these two Lines meet, and that is the exact Situation of the Place.

Note; By this Method any Town may be inserted, when the Longitude and Latitude of it are known, and the Place is not in the Map already.

(4th,) To find the Difference in TIME between us in *England*, and any other Place; and consequently to know *what o'Clock* it is at any Place in the World.

Having looked the Place; only bring your Finger down to the Bottom of the Map, and there you will find the Difference either before or after us, the Time being figured on the Maps.

Thus at *Constantinople*, the Residence of the Great Turk, it is always 2 Hours before us; but at *Jamaica* in the *West-Indies*, the Time is 5 Hours after us.

(5th,) To measure the DISTANCE and POSITION of one Town from another.

If the Places lie under the same Meridian, only count the Number of Degrees between them; these multiplied by 60, gives the *Distance* required.— But if the Places lie in any other Direction, then with a Pair of *Dividers*, open from one to the other; apply this Opening to the Meridian, which runs equally between them, (remembering to place the Legs equally above and below the Parallels, which run through those Places) then count the Degrees on the Side of the Map, between the two Points of the *Dividers*, which Degrees, multiplied by 60, will give the *Distance*, as before.

The little *Compass* you find inserted will shew how the Places *bear* from each other.

Thus the Distance from *London* to *Vienna* in *Germany* is about 11 Degrees or 660 Miles almost East; and to *Dublin* in *Ireland* is about $4\frac{1}{4}$ Degrees or 255 Miles North West.

(6th,) To find what Nations and People *rise, dine, sup, and go to bed*, at the same Time with one another.

Look into the Map of the World, (at the Beginning of the Book) and observe those Nations, which lie near or under the *same Meridian*; for the Inhabitants of those several Countries are employed in the same Offices of Life at the same Time.

Thus you see the *Scotch, French, Spanish, Moors, and Negroes*, as they are under the same Meridian with the *English*, must, consequently, *rise, dine, sup, and go to bed*, when we do here.

The Difference of the MILES in several Countries is very *great*; but it will be useful to remember, That

The *English, Italian, and Turkish*, are nearly the same, viz. each 1760 Yards.

The *Scotch and Irish* Mile is about $1 \frac{1}{2}$ *English*.

The *German, Danish, Dutch, and Polish*, is about 4 *English*.

The *Swedish* is about 5 *English*.

The *Spanish* is about $3 \frac{1}{2}$ *English*.

The *Hungarian and Danish* is about 6 *English*.

The *Russian* is about $\frac{3}{4}$ *English*.

The *Arabian* is about $1 \frac{1}{4}$ *English*.

The *Persian, Arabian, and Egyptian*, is about 3 *English*.

The *Indian* is almost 3 *English*.

The *Japan* is about *half a Quarter* of an *English* Mile.

The *French League* is 2 of our own Miles.

The *English League* is 3 of our own Miles.

Note; If the whole LAND be supposed to be divided into 100 Parts,

Europe	} will be about	$\left\{ \begin{array}{c} 12 \\ 27 \\ 26 \\ 35 \end{array} \right\}$	} of those Parts.
Asia			
Africa			
America			

Note also; the RELIGIONS in the World are four.—*Paganism—Judaism—Christianity—and Mahometanism*.—Among the Professors of each of these Religions, we find some little Differences and Distinctions taking Place in the Mode of their Worship.

If we suppose all the INHABITANTS on the Earth to be divided into 30 equal Parts,

The Pagans	} will be about	$\left\{ \begin{array}{c} 18 \\ 1 \\ 5 \\ 6 \end{array} \right\}$	} of those Parts.
The Jews			
The Christians			
The Mahometans			

The Number of *Inhabitants* computed at present to be in the *known World* at a *Medium*, taken from the best Calculations, are about 953 *Millions*.

Europe	contains	—	153	} Millions
Asia	—	—	500	
Africa	—	—	150	
America	—	—	150	

Total 953 Millions.

Some Writers make the Number of Persons on the Earth to be about 1000 Millions; and suppose a Generation to last 33 Years; then the above Number must die off in that Time. Consequently the Number of Deaths in one Year will be 30 Millions;—in one Day 82 Thousand;—in one Hour 3 Thousand 4 Hundred;—in one Minute Sixty;—in one Second One. On the other Hand, it having been found, that the Number of *Deaths* is to the *Births* as 10 to 12 nearly; it follows, that the Births in 1 Year are 36 Millions;—in 1 Day 98 Thousand;—in 1 Hour 4000;—in 1 Minute 72;—in 1 Second 1.

If the Human Race had been immortal, that is, if none had died off, there would be at this Time upon the Globe 173,000,000,000 Persons living.

A
D E S C R I P T I O N
O F

Commodore ANSON'S Voyage round the WORLD.

THE *English* foreseeing a *War* would unavoidably happen with *Spain*, the *Government* came to a Resolution of sending a *Squadron* of Ships into the *South Seas* to make Reprisals on the *Spaniards* in that Part of the World. Accordingly *Commodore Anson*, having received Orders for that Expedition, set sail in the *Centurion*, with six or seven Ships more from *Portsmouth*, the 8th of *September* 1740; but meeting with contrary Winds, did not arrive so far as *Madeira* till 40 Days after; viz. *October* 25.—This is a small Island belonging to the *Portuguese*, and is famous for its excellent *Wine**.

On the 3d of *November* he left the *Madeiras* bound for *St. Catherine's*, a small Island on the Coast of *Brasil* in *South America*, where (by the Benefit of the *Trade Winds*, after crossing the *Equinoctial Line* the 28th of *November*) he came safe to an Anchor on the 18th of *December*.

Staying here to refresh the *Crew*, and refit his *Ships*, till the 18th of *January*, he set sail, and pursued his Voyage to the Bay of *St. Julian*, on the Coast of *Magellanica*, where he anchored the 1st of *February*.—This is a large, wild, and desolate Country, claimed by the *Spaniards*, but they have made no Settlements in it. The *Natives* are represented as *Giants*.

The *Commodore* weighed Anchor at *St. Julian* the 27th of *February*, proposing to attack *Baldivia*, a principal Port of the *Spaniards*, on the opposite Side of the Continent in *Chili*; but meeting with dreadful Storms, which separated his *Fleet* in passing round *Cape Horn*, he was obliged to steer directly for *Juan Fernandes*, an uninhabited Island about 110 Leagues from the Coast of *Chili*; where he did not arrive till the 9th of *June*, 1741.—This *Island* abounds in beautiful *Lawns*, fine *Pasturages*, &c. and is the Property of *Spain*.

Having continued here upwards of three Months with a View of recovering his Men, who were most of them ill with the *Scurvy*, as well as for the separated Ships to rejoin him; on the 19th of *September* he left *Juan Fernandes*; and after taking several small Prizes on the Coast of *Chili*, arrived at *Paita*, a large Sea-port in *Peru* near the *Equinoctial*, which he took, plundered, and burnt.

* In the Map at the Beginning of the Book is delineated the Tract which *Commodore Anson's* Ship took in sailing round the World.

From hence, the *Squadron* sailed away on the 16th of *November*, and reached the Island *Quibo*, near *Panama*, on the 3rd of *December*: And, having taken in *Wood* and *Water*, left it the 9th of *December*. The next Day he took a small Prize, and then sailed for the Coast of *Mexico*, to cruise off the Port of *Accapulco*, in Hopes of taking a rich *Galleon*, belonging to the *Spaniards*, which usually sails early in the Spring from thence to *Manilla*, one of the *Phillippian Isles* in *Asia*.

The Governor of *Accapulco* getting Intelligence of the *English* being upon their Coast, deferred the sailing of that Ship till the Year following: On which Disappointment, the Commodore steered away to *Chequetan*, a Port farther *North*; and having taken in fresh *Water*, &c. departed from the Coast of *Mexico* the 6th of *May* 1742 for *China*. But meeting with great Distresses in his long Voyage over the vast *Pacific Ocean*, was obliged to get to the first Land. On the 27th of *August* they made the *Ladrone Isles*, and in a Day or two more got into *Tinian*, one of the most pleasant; which, though uninhabited, was found full of *Cattle*, *Fruits*, and *Game*. These *Isles* belong to *Spain*.

Here Mr. *Anson* met with Distresses greater than any he had encountered before: For, on the 22d of *September*, a violent *Storm* of *Wind* arising, his Ship was driven from its *Anchor*, and forced to Sea, leaving himself and the greater Part of his Men on Shore; who concluded that the Ship would be inevitably lost, and all on Board perish. But whilst they were contriving a Method to escape if possible, the Ship, to their inexpressible Joy, returned on the 11th of *October*, after having been absent 19 Days, and all the Hands in the greatest Distress.—The Commodore having recovered his Ship, and sufficiently refreshed his Men, departed from *Tinian* the 21st of *October*; and passing between the Islands *Formosa* and *Luconia*, made the Coast of *China* the 5th of *November*; and on the 12th anchored at the little Island *Macao*, belonging to the *Portuguese*, near *Canton*.

Mr. *Anson* having here new-rigged his Ship and got in fresh Stores, weighed Anchor the 19th of *April* 1743, and stood to Sea; where he soon came to a Resolution of steering back and cruising off the *Phillippian Isles* for the *Manilla* Ship, which was to have sailed from *Accapulco* to these Parts the Year before. Where plying till the 1st of *July*, the *Colours* of the long expected Ship appeared in View; which they soon came up with, and, after a smart Engagement, took. The Commodore returned with his Prize to *Canton*, and on the 11th of *July* came to an Anchor off *Macao* again.—This Ship and Cargo proved to be worth almost a *Million* of Money.

Having finished his Affairs at *Canton*, and sold his Prize, the Commodore set sail the 15th of *December*, and on the 3d of *January* came to an Anchor in the Straights of *Sunda*; where he continued to take in *Wood* and *Water*, till the 8th, then standing for the *Cape of Good Hope*, the most Southern Part of *Africa*, anchored in *Talic Bay* the 11th of *March*. The Settlements here belong to the *Dutch*.

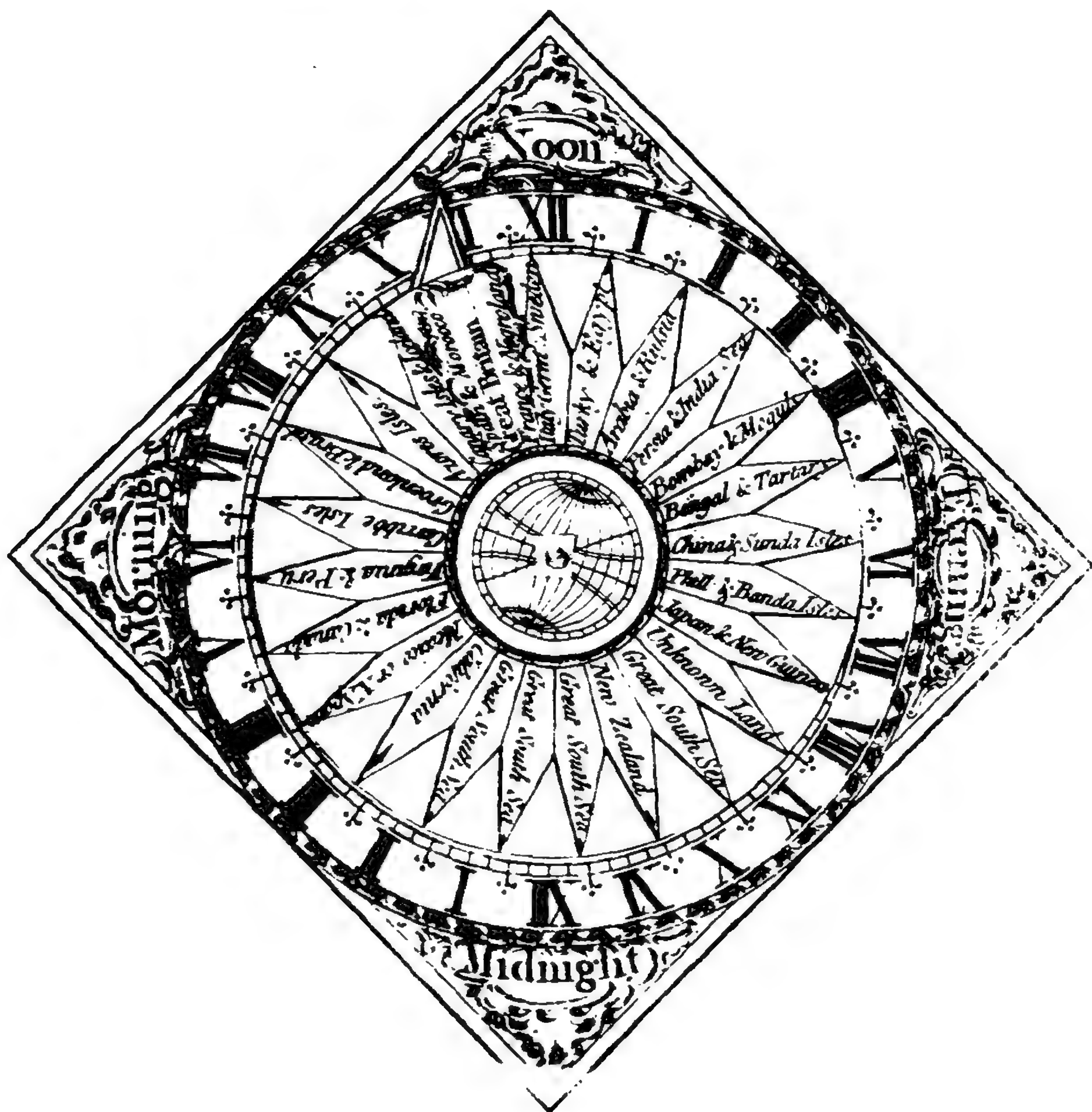
On the 3rd of *April* 1744, his Business being compleated at the *Cape*, he put to *Sea* again. On the 19th was in Sight of the Island *St. Helens*, but did not touch there. The 10th of *June* he spoke with an *English* Ship bound to *Philadelphia*, which gave him Intelligence of a *War* with *France*. This greatly alarmed him; but bearing up with his usual *Intrepidity*, he steered clear of the *French Fleet*, which was then at *Sea*, and on the 15th of the same Month arrived safe to an *Anchor* at *Portsmouth*, to the great *Joy* of the whole *Crew*, as well as their Friends; after an Absence of almost four Years,—and having *lost one Day* in his *Reckoning*.*

* This is easy to be accounted for: For, if a Man travel the same Way with the *Sun*, he will lengthen his Day a little; i. e. he will find it to be something longer than it would have been, had he staid at the Place he came from. This small Addition being made to each Day of his *Tour* round the *Globe*, will amount in all to a whole Day: Consequently he must reckon on his Return one Day less, than they do, who have continued still at the same Place. For it is evident,—that the *Sun* must have gone once more by them, than by him, who journeyed round the Earth with it.—See more at Paradox 4th.

SINCE Lord Anson's Time, several Voyages have been made round the *Globe*, by English Gentlemen.———*Commodore Byron*, by Order of his Majesty, sailed from the Downs the 21st of June 1764, to make Discoveries in the South Seas. On the Coast of Patagonia he conversed with that Gigantic Race of Men, about 7 Feet in Height, whose Existence had been the Subject of much Dispute. He passed through the Straits of *Magellan*, crossed the South Sea, without making any very remarkable Discoveries, and anchored in the Downs again the 9th of May 1766.———*Captain Wallis* left Plymouth the 16th of August 1766, sailed through the *Magellanic Straits*, and returned to the Downs the 20th of May 1768.———*Captain Carteret* set sail with Captain Wallis from Plymouth, but was unfortunately separated the 11th of April following. After escaping the most eminent Dangers in the Straits of *Magellan*, he crossed the *South Sea*, and came to an Anchor at Spithead, the 20th of March 1769.———*Captain Cook* [his Majesty being determined to prosecute the Discoveries begun in the South Seas] was appointed to the Command of the Ship named the *Endeavour*, with which he sailed from Portsmouth the 26th of August 1768, and after the most satisfactory Voyage that ever was undertaken, he anchored in the Downs the 12th of June 1771. Among the New Countries discovered by this important Voyage, the immense Line of the Coast of *New South Wales* in Asia, which heretofore was marked as Sea, claims the Pre-eminence. A Territory of Two Thousand Miles Extent is hereby added to the Crown of Great Britain. And *New Zealand*, a Country nearly under us, he first discovered to be two vast Islands. *Otaheite*, and the neighbouring Islands in the South Seas, which he either discovered or touched at, are pictured in Colours, which must ever render them pleasing to Europeans.——After having thrice circumnavigated the *Globe*, and explored the utmost navigable Limits of the Ocean in every Quarter, this great, but unfortunate Man, was cut off by the Savage Natives of *Owyhee*, one of the *Sandwich Islands*, January 14th, 1779.

THE
EXPLANATION and USE
OF THE
GEOGRAPHICAL CLOCK.

THE outer Circle, which is fixed, and divided into twice XII. represents the 24 Hours of Day and Night: The moveable Circle within has the Capital Kingdoms and Nations of the Earth inscribed according to their Longitude; or Difference in Time from each other. The Top is always *Noon*; the Bottom *Midnight*; the Left-hand Side is *Morning*; the Right-hand *Evening*; as the Figure itself points out. Some of the many Uses of this little *Machine* are as under.



Bring *Great Britain* to the Hour on the outer Circle, that it is by your Watch; then against the several Countries inserted in the moveable Circle, you have the Time of *Day* or *Night* at those Places at one View.

Thus

Thus, when it is 10 in the *Morning* with us in *Britain*—it is almost 10 at the Courts of *Spain* and *Morocco*;—a little past 10 at *France* and *Negrolend*;—about 11 through *Italy*, *Germany*, and *Sweden*.—Noon at the Residence of the *Great Turk*, and with the *Egyptians*, &c.—3 in the *Afternoon* at our Settlements at *Bombay* and the *Moguls*;—5 at *China*;—10 at *Night* at *New Zealand*, which are nearly our *Antipodes*.—Midnight to those sailing in the *Great South Sea*;—3 in the *Morning* at *Mexico* or *New Spain*;—5 at *Virginia* and *Peru*;—7 at *Greenland* and the *Brazils*;—and 9 at the *Canary Isles* and *Iceland*.

Hence also, at one View, you may see at every Hour of the Day how the whole World is engaged, and what the several Inhabitants are supposed to be employed in.—You may see where they are *Rising*;—where *Breakfasting*;—*Dining*;—*Drinking Tea*;—where going to *Supper*, or *Assemblies*;—and where to *Bed**.

* This is grounded upon a Supposition, that 5 or 6 o'Clock in the Morning may be taken for the Time of *Rising*;—9 for *Breakfasting*;—12 and 1 for *Dining*;—5 for *Drinking Tea*;—8 for *Supping*;—and 10 for going to *Bed*.

The Different MANNER by which *some Nations and People* reckon TIME.

THE *Babelonians*, *Persians*, and *Syrians*, and some Part of *Germany*, account the 24 Hours of the natural Day to begin at *Sun-rising*.

The (ancient) *Jews*, *Athenians*, and *Italians*, reckon from *Sun-setting*.

The *Egyptians*, like the *English*, &c. begin at *Midnight*.

The *Astronomers* and *Seamen* begin the Day at Noon, and reckon on 24 Hours to the next Day at Noon.—And according to this Mode of reckoning are all the Calculations of the *Sun*, *Moon*, and *Planets* made and inserted in the common Almanacks.

T H E

D E S C R I P T I O N and U S E

O F T H E

TERRESTRIAL GLOBE.

THE *Terrestrial Globe* is an artificial *Sphere* or round *Ball*, upon whose Surface are exactly delineated the chief *Kingdoms*, *Nations*, and *Cities* on the Earth, in their proper *Situations* and *Distances*, just as they are in *Nature*.

This curious *Instrument* consists of several Parts.

(1.) The 2 *Poles* (being the Ends of the Axis, on which the Globe turns to perform the Diurnal Motions) representing those of the World: The Upper is the *North Pole*, and the Lower the *South Pole*.

(2.) The *Brass Meridian* divided into 4 Quarters, and each Quarter into 90 Degrees: The upper Part is graduated from the Equator towards the Poles; but the lower Part from the Poles towards the Equator. This Circle surrounds the Globe, and is conjoined to it at the Poles themselves.

(3.) The *Wooden Horizon* or *Frame*, which supports the whole Globe; the upper Part of it represents our *true Horizon*, and has several Circles drawn upon it.—The first, next the Globe, contains the 12 *Signs* of the *Zodiac*, through which the Sun or Earth revolves in a Year; these are subdivided into single Degrees.—The next Circle exhibits the *Julian*, and the third the *Gregorian* Kalendar (or *Old Stile* and *New Stile*) divided into *Months* and *Days*.—On the outside of these are generally delineated the 32 *Points* of the *Compass*.

(4.) The *Hour Circle*, divided into twice 12 Hours, fitted to the Meridian round the North Pole. The upper 12 represents Noon; the lower 12, Midnight. Upon the Pole is fixed a little *Index*, useful, as it turns round, to point the Hour of Day or Night.

(5.) A thin Slip of Brass called a *Quadrant of Altitude*, divided into 90 Degrees, the same Size with those on the Equinoctial; this is to be fastened occasionally to the Top of the Meridian, in order to measure the *Distances* and *Directions* of Places from each other.



*E'er half the SCHOOL Authors be Read, it will be seasonable for YOUTH to learn
the Use of the GLOBES.*

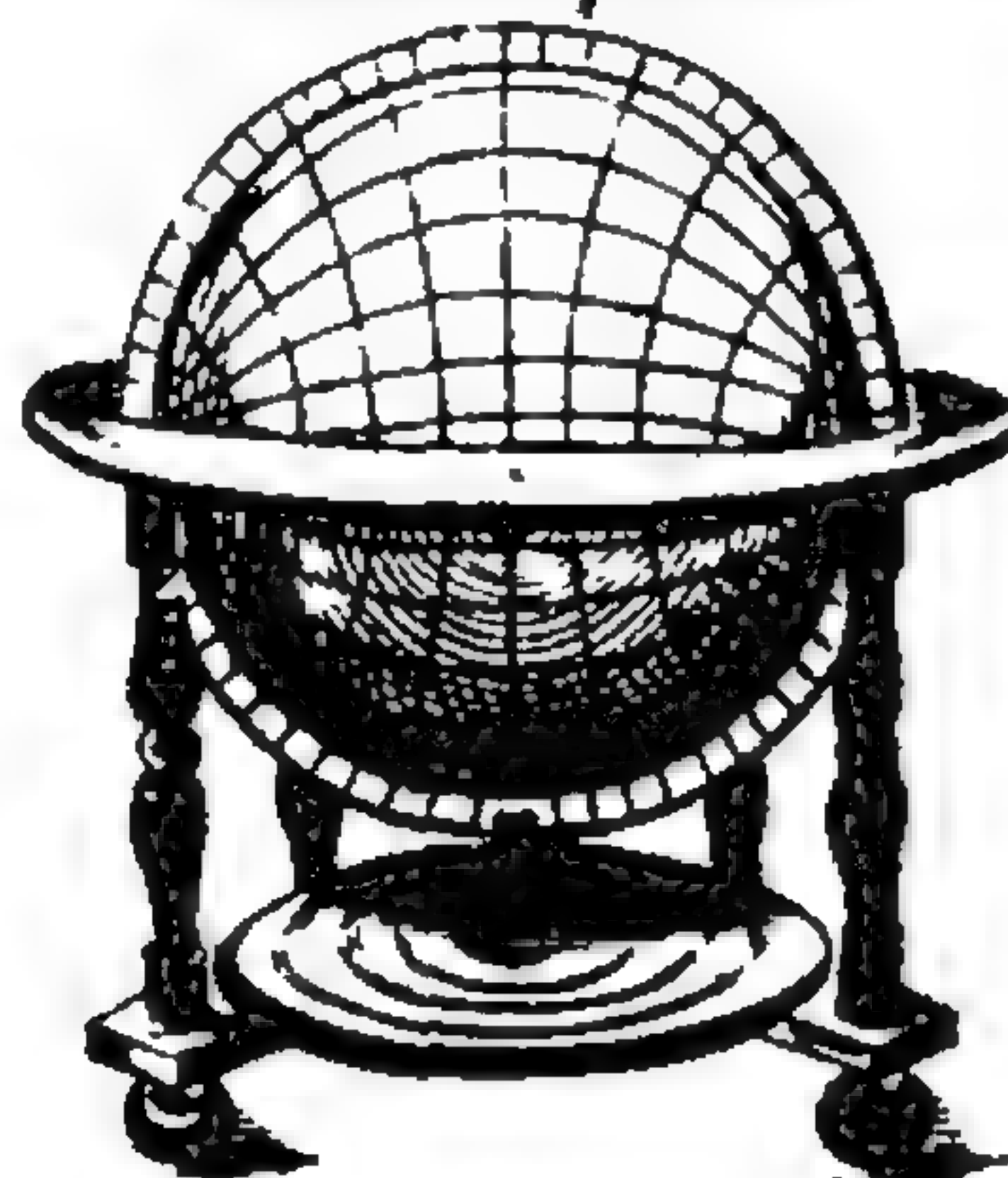
MILTON on Education.

The GLOBE or Sphere in its Three Different Positions

Parallel Sphere.



Direct Sphere.



Oblique Sphere.



T.K. Powell Sculp.

(Laſtly,) On the *Surface* of the Globe are alſo delineated the *Equinoctial* Line divided into 180 Degrees each Way from the firſt, or chief Meridian : —The *Ecliptic* * divided into the 12 Signs, and each Sign into 30 Degrees ; —the *Tropics* of Cancer and Capricorn ; —the 2 *Polar* Circles ; —and the 24 *Meridians*, correſponding to the 24 Hours of the Day and Night.

The USE of this curious *Mathematical* Inſtrument, is to point out the various *Phænomena* belonging to the different *Nations* and *Inhabitants* of the World, with Reference to their *Distance*, *Position*, *Varieties of Days* and *Nights*, *Changes* and *Revolutions* of the *Seasons*, in an eaſy and natural Manner ; without the Trouble of long and tedious Calculations.

* The *Ecliptic Line* repreſents that Path in the Heavens, which the Sun ſeems to deſcribe by the Earth's yearly Revolution round it. It is divided into 12 equal Parts, and each of thoſe into 30 more, correſponding to the 12 Months and the Days of the Months. The *Names* and *Characters* of the 12 Signs, with the Time of the *Sun's Entrance* into each, is as follows.

<i>Aries</i>	<i>Taurus</i>	<i>Gemini</i>	<i>Cancer</i>	<i>Leo</i>	<i>Virgo</i>	<i>Libra</i>	<i>Scorpio</i>	<i>Sagittarius</i>	<i>Capricornus</i>	<i>Aquarius</i>	<i>Pisces</i> .
♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
Mar. 20.	Apr. 20.	May 21.	June 22.	July 23.	Aug. 23.	Sept. 23.	Oct. 24.	Nov. 22.	Dec. 22.	Jan. 20.	Feb. 19.

The *Globe* is an Inſtrument ſo exceedingly uſeful and entertaining, that no Gentleman who ſtudies *Hiſtory*, *Geography*, *Aſtronomy*, or *Chronology*, ſhould be without it.

The most **USEFUL PROBLEMS** are these, which follow.

PROBLEM I. To find the *Latitude* of any Place.

Only bring the Place to the graduated Side of the *Brass Meridian*, and the Figure that stands over it shews its *Latitude*, or Distance from the Equinoctial

Degrees.
Thus the Latitude of *London* is—51 and $\frac{1}{2}$ *North*.
Jerusalem is—32 ——— *North*.
and the *Cape of Good Hope*—34 and $\frac{1}{2}$ *South*.

Note, If a Place lies on the North Side of the Equinoctial Line, it has *North Latitude*; but if on the South Side, it has *South Latitude*.

Note, The Latitude of a Place can never be more than 90 Degrees either *North* or *South*,—that being the greatest Distance of the Poles (on each Side the Globe) from the Equinoctial Line.

PROBLEM II. To find the *Longitude* of any Place.

Bring the Place to the *Brass Meridian*; then observe the Degree the Meridian cuts on the Equinoctial, and that is its *Longitude*, or Distance in Degrees either *Eastward* or *Westward*, from the *first Meridian*; which, in some Globes, begins at *Ferro*, in others at *Teneriff*, but on the new ones, at *London*.

Degrees.
Thus the Longitude of *Mecca* in *Arabia* is—43 $\frac{1}{2}$ *East* } from *London*.
And the Longitude of *Port Royal* in *Jamaica* is 77 *West* }

Note, The *Longitude* of a Place can never be more than 180 Degrees either *East* or *West*: Because that Distance brings you to the opposite Part of the Meridian, which is the farthest any Place can possibly be from us.

PROBLEM III. To *rectify* the Globe, (i. e.) to place it in such a particular Situation as is necessary for the Solution of many of the following Problems.

Having turned the graduated Side of the Meridian towards you, move it higher or lower till the Pole stands as many Degrees above the Horizon as the Latitude of the Place is, you would rectify for. Thus, if the Place be *London*, you must raise the Pole 51 $\frac{1}{2}$ Degrees, (because that is the Latitude of it) which brings that City to the Top or Zenith of the Globe, and over the Center of the Horizon; then turn the *North Pole* of the Instrument to the North Part of the World, which may be done by Means of a little Compass, and the Globe will represent the natural Situation of the Earth itself —

Note, In all Problems relating to *North Latitude*, you must elevate the *North Pole*; but in those that have *South Latitude*, you must raise the *South Pole*.—

The *North Pole* must always incline to that Part of the Horizon marked *June*; and the *South Pole* to that marked *December*.

PROBLEM

* *Note*: The Globe, with Respect to the Horizon, may be placed in three different Positions, whence come the Distinctions of a *Right*, *Cosmic*, and *Parabolic* Globe, as represented in the Plate of the Globe.
The

PROBLEM IV. The *Longitude* and *Latitude* of a Place being given, to find it upon the Globe.

Only bring the Degree of *Longitude* found on the Equator to the Meridian : then under the Degree of *Latitude* is the Place required.

Thus, suppose an *English Privateer* falls in with a *French Ship* in 36 Degrees 20 Minutes *North Latitude*, and 32 Degrees *Longitude West* from *London* ; you will find it to be in the Middle of the vast *Atlantic Ocean*, a little South of the *Azore Isles*.

PROBLEM V. To find the *Sun's Place* in the *Ecliptic*.

Look the Day of the Month in the outer Calendar upon the Horizon, (if the Globe was made before the Alteration of the Stile) and opposite to it, you will find the *Sign* and *Degree* the Sun is in that Day.—Thus on the 25th of *March*, the Sun's Place is $4\frac{1}{2}$ Degrees in *Aries*.—Then look for that Sign and Degree upon the *Ecliptic Line* marked on the Globe, and there fix on a small black Patch, so is it prepared for the Solution of the following Problems.

Note ; The *Earth's Place* is always in the Sign and Degree *opposite* the *Sun* ; thus when the Sun is $4\frac{1}{2}$ Degrees in *Aries*, the Earth is $4\frac{1}{2}$ Degrees in *Libra* ; and so of any other.

PROBLEM VI. To find the Sun's *Declination*, that is, his Distance from the Equinoctial Line either *Northward* or *Southward*.

Bring his Place to the Edge of the Meridian ; observe what Degree of the Meridian lies over it, and that is his Declination.—If the Sun is on the *North Side* the Line, he is said to have *North Declination* ; but if on the *South Side*, he has *South Declination*.

Thus on the 20th of *April* the Sun has $11\frac{1}{2}$ Degrees *North Declination*, but on the 26th of *October*, he has $12\frac{1}{2}$ *South Declination*.

Note ; The greatest Declination can never be more than $23\frac{1}{2}$ Degrees either *North* or *South*.—That being the greatest Distance of the *Tropics* from the Equinoctial, and beyond which the Sun never goes.

The *Sphere* is *Direct* or *Right* when the Poles of the World are in the Horizon, and the Equator passes through the Zenith. People, who live in this Sphere, are said to live under the Line, (as they do in many Places in *Africa*, *East-Indies*, and *America*) their Days and Nights are always equal ; the Sun is over their Heads twice a Year ; and all the Stars in both Hemispheres are visible in different Parts of the Year.—A *Parallel Sphere* has the Poles of the World in the Zenith, and the Equator in the Horizon. In this Position, one Half of the *Ecliptic* is above the Horizon, and the other Half below it.—Consequently, those who live at the Poles, (if any such) have one Half of the Year Day, the other Half Night ; with a Twilight, that continues about two Months. They never see but one Half of the Heavens, which is continually revolving round them.—An *Oblique Sphere* is that, which has the Poles of the World inclined between the *Horizon* and *Zenith*. In this Situation all the Circles on the Globe are cut unequally by the Horizon, except the Equator. All the People in the World, except those who inhabit at the Equator and the Poles, have this Position. The Days and Nights are always *unequal*, unless at the Times of the Equinoxes in *March* and *September*. The Increase of this Inequality, as well as of the Twilight, becomes more sensible the nearer they approach the Poles.—The Height of the Pole above the Horizon (in Degrees) is ever equal to the Latitude of that Place, or Distance of it from the Equinoctial.

PROBLEM VII. To find where the Sun is *Vertical* on any Day:—That is, to find over whose *Heads* the Sun will pass that Day.

Bring the Sun's Place to the Meridian, observe his Declination, or hold a Pen or Wire over it, then turn the Globe round, and all those Countries which pass under the Wire will have the Sun over their Heads that Day at *Noon*.

Thus on the 16th of *April* the Inhabitants of the North Parts of *Terra Firma*, *Porto Bello*, *Philippian Isles*, Southern Parts of *India*, *Abyssinia*, *Ethiopia*, and *Guinea*, have the Sun over their *Heads* that Day at 12 o'Clock.

Note, This *Appearance* can only happen to those who live under the *Torrid Zone*, because the Sun never *strays* farther from the Equinoctial, either Northward or Southward, than to the two Tropicks from whence he returns again.

PROBLEM VIII. To find over whose Heads the Sun is at any given *Hour*.

Bring the Place where you are (suppose at *London*) to the Meridian; set the Index to the given Hour by your Watch, then turn the Globe till the Index points to the upper 12, or *Noon*, look under the Degree of Declination for that Day, and that is the Place to which the Sun is Vertical, or over its Head at that Time.

Thus on the 13th of *May*, a little past 5 in the Afternoon at *London*, I find the Sun is then over the *Heads* of those who live at *Port Royal* in *Jamaica* in the *West Indies*.

Note; If it be Morning, the Globe must be turned from East to West: If in the Afternoon, it must be turned from West to East.

PROBLEM IX. To find, at any Hour of the Day, what o'Clock it is at any Place in the World.

Bring the Place where you are to the Brass Meridian; set the Index to the Hour by your Watch, turn the Globe till the Place you are looking for comes under the Meridian, and the Index will point out the Time there required.

Thus when it is 6 o'Clock in the Evening at *England*—'tis half an Hour past 8 at Night at *Jerusalem*.—Almost *Midnight* at the Palace of the *Great Moguls*.—2 in the *Morning* at *Pekin*.—7 in the Middle of the *Great South Sea*; and *Noon* at *Florida*, *Canada*, and the *Isthmus* of *Panama*.

Note; By this Problem you may likewise see, at one View, in distant Countries, where the Inhabitants are *Rising*—where *Breakfasting*—*Dining*—*Drinking Tea*; where going to *Assemblies*,—and *where to Bed*.

The Sun's *Longitude*, *Right* and *Oblique Ascension*, *Azimuth*, &c. are considered and explained in the Use of the *Celestial Globe*, annexed to my *New System of Modern Astronomy*.

PROBLEM X. To find at what Hour the Sun *rises* and *sets* any Day in the Year ; and also upon what Point of the *Compass*.

Rectify the Globe for the Latitude of the Place you are in ; bring the Sun's Place to the Meridian, and set the Index to 12 ; then turn the Sun's Place to the *Eastern* Edge of the Horizon, and the Index will point out the Hour of *rising* ; if you bring it to the *Western* Edge of the Horizon, the Index will shew the *setting*.

Thus on the 16th Day of *March*, the Sun rose a little past 6, and set a little before 6.

Note ; In the Summer the Sun rises and sets a little to the *Northward* of the East and West Points, but in Winter, a little to the *Southward* of them. If therefore, when the Sun's Place is brought to the Eastern and Western Edges of the Horizon, you look on the inner Circle right against the little Patch, you will see the *Point of the Compass* upon which the Sun rises and sets that Day.

PROBLEM XI. To find the *Length* of the *Day* and *Night* at any Time of the Year.

Only *double* the Time of the Sun's *rising* that Day, and it gives the Length of the *Night* ; *double* the Time of his *setting*, and it gives the Length of the *Day*.

This Problem shews how long the Sun stays with us any Day, and how long he is absent from us any Night.

Thus on the 26th of *May* the Sun rises about 4 and sets about 8 ; therefore the *Day* is 16 Hours long ; and the *Night* 8.

PROBLEM XII. To find the Length of the *longest* or *shortest* Day at any Place upon the Earth.

Rectify the Globe for that Place, bring the Beginning of *Cancer* to the Meridian ; set the Index to 12, then bring the same Degree of *Cancer* to the *East* Part of the Horizon, and the *Index* will shew the Time of the Sun's *Rising*.

If the same Degree be brought to the *Western* Side, the Index will shew the *Setting*, which *doubled* (as in the last Problem) will give the Length of the *longest* Day and *shortest* Night.

If we bring the Beginning of *Capricorn* to the Meridian, and proceed in all respects as before, we shall have the Length of the *longest* Night and *shortest* Day.

Thus in the great *Mogul's* Dominions, the *longest* Day is 14 Hours ; and the *shortest* Night 10 Hours. The *shortest* Day is 10 Hours, and the *longest* Night 14 Hours.

At *Peterburgh*, the Seat of the Empress of *Russia*, the longest Day is about $19\frac{1}{2}$ Hours, and the shortest Night $4\frac{1}{2}$ Hours. Shortest Day $4\frac{1}{2}$ Hours, and longest Night $19\frac{1}{2}$ Hours.

Note; In all Places near the *Equator*—the Sun rises and sets at 6 the Year round.—From thence to the *Polar Circles*, the Days increase as the Latitude increases; so that at those Circles themselves, the longest Day is 24 Hours, and the longest Night just the same.—From the *Polar Circles* to the *Poles*, the Days continue to lengthen into Weeks and Months; so that at the very Pole, the Sun shines for 6 Months together in *Summer*, and is absent from it 6 Months in *Winter*.—*Note*; That when it is Summer with the Northern Inhabitants, 'tis Winter with the Southern, and the contrary; and every Part of the World partakes of an equal Share of Light and Darkness.

PROBLEM XIII. To find all those Inhabitants to whom the Sun is this Moment *rising* or *setting* in their *Meridian* or *Midnight*.

Find the Sun's Place in the *Ecliptic*, and raise the Pole as much above the *Horizon* as the Sun (that Day) declines from the *Equator*; then bring the Place where the Sun is Vertical at that Hour to the Brass Meridian; so will it then be in the *Zenith* or Center of the *Horizon*. Now see what Countries lie on the *Western* Edge of the *Horizon*; for in them the Sun is *rising*;—to those on the *Eastern* Side he is *setting*;—to those under the upper Part of the Meridian 'tis *Noon Day*:—and to those under the lower Part of it, it is *Midnight*.

Thus on the 25th of *April* at 6 o'Clock in the Evening at *Worcester*,

The Sun is <i>rising</i> at	{ <i>New Zeland</i> ; and to those who are sailing in the Middle of the <i>Great South Sea</i> .
The Sun is <i>setting</i> at	{ <i>Sweden, Hungary, Italy, Tunis</i> , in the Middle of <i>Negroland</i> and <i>Guinea</i> .
In the <i>Meridian</i> (or <i>Noon</i>) at	{ the Middle of <i>Mexico</i> ; Bay of <i>Honduras</i> , Mid- dle of <i>Florida, Canada</i> , &c.
Midnight at —	{ the Middle of <i>Tartary, Bengal, India</i> , and the Seas near the <i>Sunda Isles</i> .

PROBLEM XIV. To find the Beginning and End of *Twilight*.

The *Twilight* is that faint Light, which opens the Morning by little and little in the East, before the Sun rises; and gradually shuts in the Evening in the West, after the Sun is set. It arises from the Sun's illuminating the upper Part of the *Atmosphere*, and begins always when he approaches within 18 Degrees of the Eastern Part of the *Horizon*, and ends when he descends 18 Degrees below the Western; when dark Night commences, and continues till Day breaks again.

To find the *Beginning of Twilight*—Rectify the Globe: Turn the Degree of the *Ecliptic*, which is opposite to the Sun's Place, till it is elevated 18 Degrees in the *Quadrant of Altitude* above the *Horizon* on the *West*, so will the Index point the Hour *Twilight begins*.

To find when it *ends*—Bring the same Degree of the Ecliptic to 18 Degrees of the Quadrant on the East Side, and the Index will point the Time Twilight *ends*.

Thus on *May* 16 at *London*, Twilight begins a little after 1 in the Morning; and ends a little before 11 at Night.—In these Parts we have no total Night, but a constant Twilight from the 20th of *May* to the 20th of *July* following, which is about 2 Months.—

Note; The Reason we use the Place opposite the Sun in this Problem, and raise it *above* the Horizon, is, because the Quadrant of Altitude is not long enough, nor graduated to 18 Degrees below the Horizon.

PROBLEM XV. To measure the *Distance* from one Town to another.

Only take their Distance with a Pair of Dividers, and apply it to the Equinoctial, that will give the Number of Degrees between them, which being multiplied by 60, (the Number of *Geographical* or *computed Miles* in one Degree) gives the exact Distance sought:—Or, extend the Quadrant of Altitude from one Place to the other, that will shew the Number of Degrees in like Manner, which may be reduced to Miles as before.

Thus the Distance from *London* to *Madrid* is $11 \frac{1}{2}$ Degrees. From *Paris* to *Constantinople* $19 \frac{1}{2}$ Degrees. From *Bristol* to *Boston* in *New England* 45 Deg.
which multiplied by 60

gives computed Miles 2700

Note; No Place can be further from another than 180 Degrees—that being half the Circumference of the Globe, and consequently the greatest Distance.

PROBLEM XVI. To find the *Position*, or upon what *Point of the Compass* one Town or Country bears from another.

Rectify the Globe to the Latitude of one of the Places, and bring it to the Meridian; then extend the Quadrant of Altitude (it being fixed over that Place) to the other, and the End will point upon the Horizon the Position, and thereby shew in what Part of the World it lies directly from the other.

Thus, suppose it was required to know the Position of *Rome* from *London*. —The Globe being rectified, *London* brought to the Meridian, and the Edge of the Quadrant of Altitude laid to *Rome*, you will find the End fall against that Part of the Horizon marked S. E. At the same Time you will see, (as in the last Problem) that the Distance is about 13 Degrees, or 780 Miles. So that a *Bomb* thrown from hence, 780 Miles upon the *South East Point*, would fall exactly at *Rome*, and put the Inhabitants there in great Consternation.

PROBLEM

PROBLEM XVII. To find all those Countries in which an *Eclipse* of the *Sun* or *Moon* will be visible.

1. Of *the Sun*: Find the Place to which the Sun is *vertical* at the Time of the *Eclipse* by Problem 7th, and bring it to the *Zenith*, or Top of the Globe; then, to all those Places above the Horizon, if the *Eclipse* be *large*, will the Sun appear (Part of it) visibly obscured.

2. Of *the Moon*: Bring the *Antipodes* or Country opposite * to the Place where the Sun is *vertical* at the Time of the *Eclipse*, to the *Zenith* or Top of the Globe, and then the *Eclipse* will be seen in all Places above the Horizon at that Time.

PROBLEM XVIII. To find the *Distance* of any Place in whose *Zenith* the *Sun*, *Moon*, or any *Star* or *Comet* is at that Time.

Take the *Sun's*, *Star's*, or *Comet's* Altitude with a Quadrant in Degrees, subtract it from 90; the Remainder gives the Distance of the Sun or Comet from your own *Zenith*; which multiply by 60, the Product will give the Miles between you and the Place in whose Zenith the Sun or Comet is at that Time.

Thus, suppose the Height of the Sun on any Day is about 37 Degrees; then 37 subtracted from 90, leaves 53 for its Distance from you; which multiply by 60, gives 3180; and so many computed Miles it is to the Place over which the Sun is at that Time.—*Note*; The Sun itself will point the Way to it.

PROBLEM XIX. To calculate the *Circumference of the Earth* (that is) to find how many Miles it is *round*.

A Line going round our Globe, is supposed by Mathematicians to be divided into 360 equal Parts, called Degrees; and each of those Parts are supposed to be divided into 60 other equal Parts, called Minutes. Now our Countryman, Mr. Norwood, found by accurately measuring from *London* to *York* in 1635, that one Degree upon the Earth's Surface contained $69\frac{1}{2}$ *Statute Miles*; consequently if the whole 360 Degrees be multiplied by $69\frac{1}{2}$ or 70, which is near enough, we shall find the Circuit of the whole Earth, in measured Miles, to be 25,200.

Note; 60 computed Miles make a Degree, which makes the Circumference to be but 21,600 Miles.

* *Note*; The Reason for bringing the Place opposite the Sun to the Top of the Globe is, because the Moon is always in that Position when she is *eclipsed*.

PROBLEM XX. To calculate the *Diameter* of the Earth, (i. e.) to find how many Miles it is *through*.

It has been found by accurate Mensuration, that if a Circle measures 22 round, its Diameter will be exactly 7 : i. e. the Diameter is always a little less than one-third Part of the Circumference ; and this always holds true, be the Circle bigger or less.—Therefore if we multiply the Circumference of the Earth by 7, and divide the Product by 22, the Quotient will give the *Diameter*, or Thickness ; and which, in this Case, will be found to be 8018 *measured*, 6872 *computed* Miles.*

* *Note*, From these Dimensions of the Earth we may discover that—

(1st.) If there were a Hole made through it, and a *Millstone* let fall into this Hole, and should descend at the Rate of 1 Mile *per Minute*, it will be more than $2\frac{1}{4}$ Days in coming to the Center ; and being there, would remain suspended.

(2d.) If a *Man* be desirous of travelling round the Earth, and should go 20 Miles each Day, he would be 3 Years and $\frac{1}{2}$ in completing the Journey.

(3d.) If a *Bird* should fly round the Earth in 2 Days, she must go at the Rate of 525 (measured) Miles an Hour.

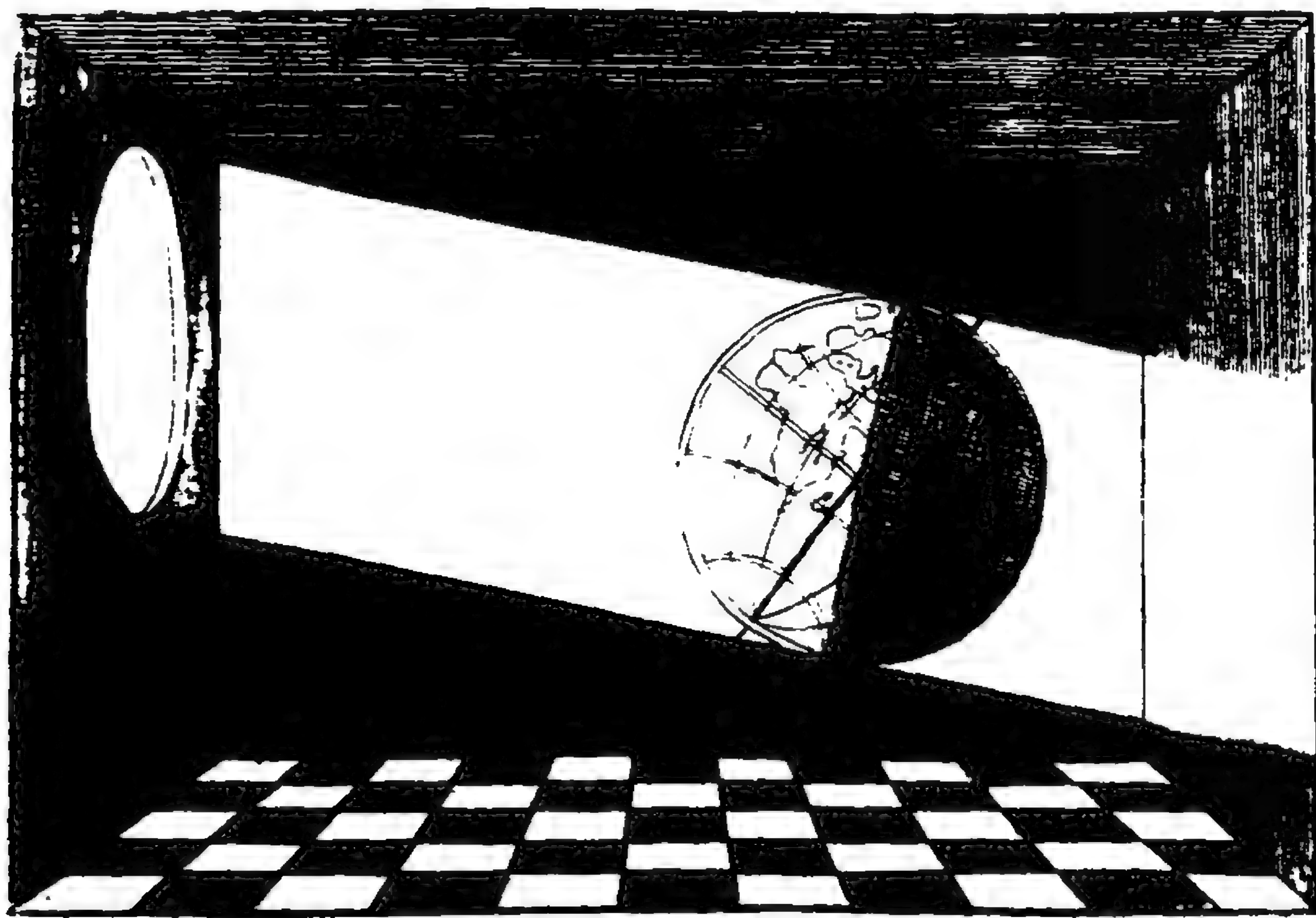
Note also, That by the rapid Motion of the Earth round its *Axis*, the Inhabitants at the *Equator* are carried more than 1000 Miles an Hour, and those at *London* upwards of 580, exclusive of the 58 Thousand Miles arising from its *Hourly Motion* in its Orbit round the Sun.

E X P E R I M E N T S

UPON THE

GLOBE in a DARKENED ROOM.

TAKE the Globe out of its *Horizon*, and tie a strong Thread to the Brass-Meridian at the Latitude of the Place you are in: By this Thread hang it to the Top of the Room, so as the Sun may shine through a Hole made in the Window-shutter freely upon it. Then directing the Poles of the Globe to their respective Poles in the Heavens; stay it fast with another Thread, that it cannot go from that Position. This done, bring the Place you are in to the Edge of the Meridian; so will the Globe be *rectified*,—and will correspond in all Respects with the *Earth* itself, and *that Part* of it you live upon.



The Globe being thus *suspended* in a Room, (made *dark* every where but at the Hole through which the *Sun Beams* enter, as exhibited in the above Figure) you may with Pleasure observe the following curious *Phænomena*, or Appearances; which will give you a clearer Idea of many Conclusions in *Geography* than any Descriptions whatever.

PHÆ-

PHENOMENON I. You will see how this *artificial* Earth, like the *natural*, will have *one* Hemisphere illuminated by the *Sun*, and the *other* involved in *Shade*.—You will see, at that Moment, where it is *Day*, and where it is *Night*.—’Tis *Day* in all the Countries within the *Sunshine*, and *Night* in the Nations *behind*, they being hid in *Obscurity* and *Shade*.

PHÆNOMENON II. If, in the *Middle* of the *enlightened Hemisphere*, you set up a *Pin* *perpendicularly*, it will project *no Shadow*, which shews that the *Sun* is just in the *Zenith* of that Place; (that is) *directly over the Heads of the Inhabitants there*.—And, if many *Pins* be stuck up in different Parts of the *Globe*, they will cast their *Shadows* exactly the same Way as the *Inhabitants* of those Places do. Some you will see pointing towards the *North*, some to the *South*; some stretching Eastward, others *Westward*; and some again projecting *no Shadow* at all.

PHÆNOMENON III. If you draw a *Meridian Line*, with a Pencil, from one Pole to the other, through the *Middle* of the *Illuminated Hemisphere*.—then in all Places under that Line it is *Noon*; in those Places situate on the *West Side*, it is *Morning*, for with them the *Sun* is seen ascending in the East; and in those Places situate on the *East Side*, it is *Evening*, for with them, the *Sun* is seen descending to the *West*.

PHÆNOMENON IV. The *Globe* still remaining in the *same Position*, you may see on the *East Side* in what *Nations* the *Sun* is stealing away, and drawing the dusky *Curtain of Night* after it; and on the *Western Side* of the *Globe*, you may observe the *Sun* creeping upon it, driving the *Darkness* before him, and blessing the *benighted Inhabitants* with the *Glories* of the coming *Day*.

PHÆNOMENON V. So many *Degrees* as the *Light* spreads beyond either the *North* or *South Pole*, just so many *Degrees* is the *Declination* of the *Sun* either *Northward* or *Southward* at that Time: And in all those Places comprehended in a Circle described at the *Termination* of the *Sunshine* about the Pole, it is *continual Day* till the *Sun decreases* in its *Declination*; for the *Sun* goes not below their *Horizon*, as you may easily perceive, by turning the *Globe* gently upon its *Axis*: And at the *opposite Pole*, to the same Distance round it, it will continue to be *Night* (the *Sun* not reaching thither) till it *decreases* in its *Declination*; for in this Situation it cannot ascend above, or be seen in their *Horizon*.

PHÆNOMENON VI. The *Globe* remaining in the *same Situation* till the *Evening*; you may, if the *Moon* shines, see what *Nations* are illuminated by the *Moon* at that Time, and where she is *rising* and *setting*:—You will also see the various Projections of the *Shadows* of the several *Inhabitants* over the *Globe*, and to which of the Poles she does not *set* that Night.

PHÆ-

PHENOMENON VII. If you take a *narrow Strip* of *Paper*, equal in Length to the *Circumference* of the *Globe*, and divide it into 24 equal Parts, to represent the 24 Hours of the *Day* and *Night*, marking it in Order from 1, 2, 3, to 12; and then beginning again 1, 2, 3, to 12, as before; you may, by *girting* the *Globe* round upon the *Equinoctial*, (provided you take Care to place one of the 6's exactly under the Meridian of your Habitation) have a continual *Sun-Dial*, which will always point out the *Hour* of the *Day* at two different Parts, viz. where the *illuminated Hemisphere* is divided from the *shaded*, both on the *Eastern* and *Western* Sides of the *Globe*.

G E O G R A P H I C A L P A R A D O X E S.

Before we *conclude* this Subject on the *Globe*, it will not, I flatter myself, be disagreeable to entertain the Reader with a few *peculiar Properties* relative to it; and which, though at *first*, may seem to carry an Air of *Falshood* or *Absurdity* with them, to those who have not been accustomed to Enquiries of this Sort, yet, upon a *more deliberate Consideration*, will be found to be *real Truths*, and such as actually exist in Fact. *Propositions* of this Kind are generally called PARADOXES; their *Design* is to awake the Appetite of the *young Learner*, rouse his Attention, and set him upon *thinking*.

PARADOX I. There is a *certain Place* upon the Earth, where the *Winds*, though frequently *veering round the Compass*, always *blow* from the *North*.

SOLUTION.—This must be at the *South Pole*, where there is no such Thing as *East* and *West*; all Winds blowing there must necessarily blow from the *North*, as all *Winds* at the *North Pole* must needs blow from the *South*; because the *Meridians* which are *North* and *South Lines*, all unite in the *Poles* themselves.

PARADOX II. There are *two remarkable Places* on the *Globe*, in which there is but *one Day* and *one Night* through the whole Year.

SOLUTION. The *two remarkable Places* are the *two Poles*: For to the *North Pole* the *Sun* rises about the 20th of *March*, and sets not till the 23d of *September*, at which Time it rises to the *South Pole*, and continues to shine there till the 20th of *March* following. And because it *rises* but *once*, and *sets* but *once* in a *Year* to either, there can be but *one Day* and *one Night* in the *whole Year*.

PARADOX III. There are *three remarkable Places* on the *Globe*, to whose *Inhabitants* all the *Stars* in *Heaven* are *visible* on three certain Nights of the Year.

SOLUTION.—This is upon the *Equator*: When at the Beginning of the Night, you see one *Hemisphere*, or *half* the *Stars*, which by the Morning set, and the *other Half* appear in their Room, which were hid the Evening before. Thus there are not only *three Places*, but *all* Places upon, or near, the *Line*, are favoured with this *Appearance*, which we here can *never enjoy*.

PARADOX

PARADOX IV. There is a certain Island in the Mediterranean Sea, on which, if *two Children* were born at the *same Instant*, and should live several Years, and both *expire* on the *same Day*, the *Life* of the *one* would exceed the *Life* of the *other* several Months.

SOLUTION.—If *one* of the Persons sail *East*, the *other West*, round the *Globe*, which is now easily done in a Year, they will *differ two Days* in their Reckoning, the *one* having *got* a Day, the *other lost* one; so that in 40 Years the one will seem to be 80 Days older in his Reckoning than the other, when in fact the Life of one is not an Hour more than the other.—Others solve this Paradox, by supposing one of the Persons to go and reside within one of the *Polar Circles* (as at Latitude 73 Degrees) where the Day is 3 Months long; and then return back to the other, who lives in a Part of the World, where the Day never exceeds 24 Hours; in this Case, though *both die* at the *same Instant*, the *one* will be *three Months* older than the *other*.

PARADOX V. There are *two Places* in *Asia* that lie under the *same Meridian*, and at a *small Distance* from each other, and yet the respective Inhabitants, in reckoning their Time, *differ an entire Day* every Week.

SOLUTION.—This seems to be the Case of the *Portuguese* and *Spaniards* in the *East-Indies*. The *Spaniards* sailing thither *Westerly*, *lost half a Day*; the *Portuguese* sailing *Easterly*, *gained half a Day*; the one having a Settlement in *China*, the other in the *Philippian Isles*, near the same Meridian, it must of course be *Saturday* with the one when it is *Sunday* with the other.

PARADOX VI. *Three certain Men* went a *Journey*, in which, though their *Heads* travelled *twelve Yards* farther than their *Feet*, yet all returned *alive*, and with their *Heads on*.

SOLUTION.—If any Person should travel round the *Globe*, the Space gone over by his *Head* will exceed that of his *Feet*, by the *Circumference* of a Circle, whose *Semi-Diameter* is the Man's own *Height*.—Now suppose *Drake*, *Cavendish*, or *Anson*, who went round the *Globe*, were each of them near 2 Yards high; then will the *Diameter* of the Circle be 4 Yards, and the *Circumference* something more than 12 Yards; and so much farther did the *Heads* of these Gentlemen go than their *Feet*.

* * * Something like this happens to a *Horse* in a *Mill*. The *off Side* goes *six Times* the Thickness of the *Horse* farther than the *Side next* the Center, in each Revolution, yet the *near Side* does not seem to travel *faster*, nor is the *off Side* left behind.

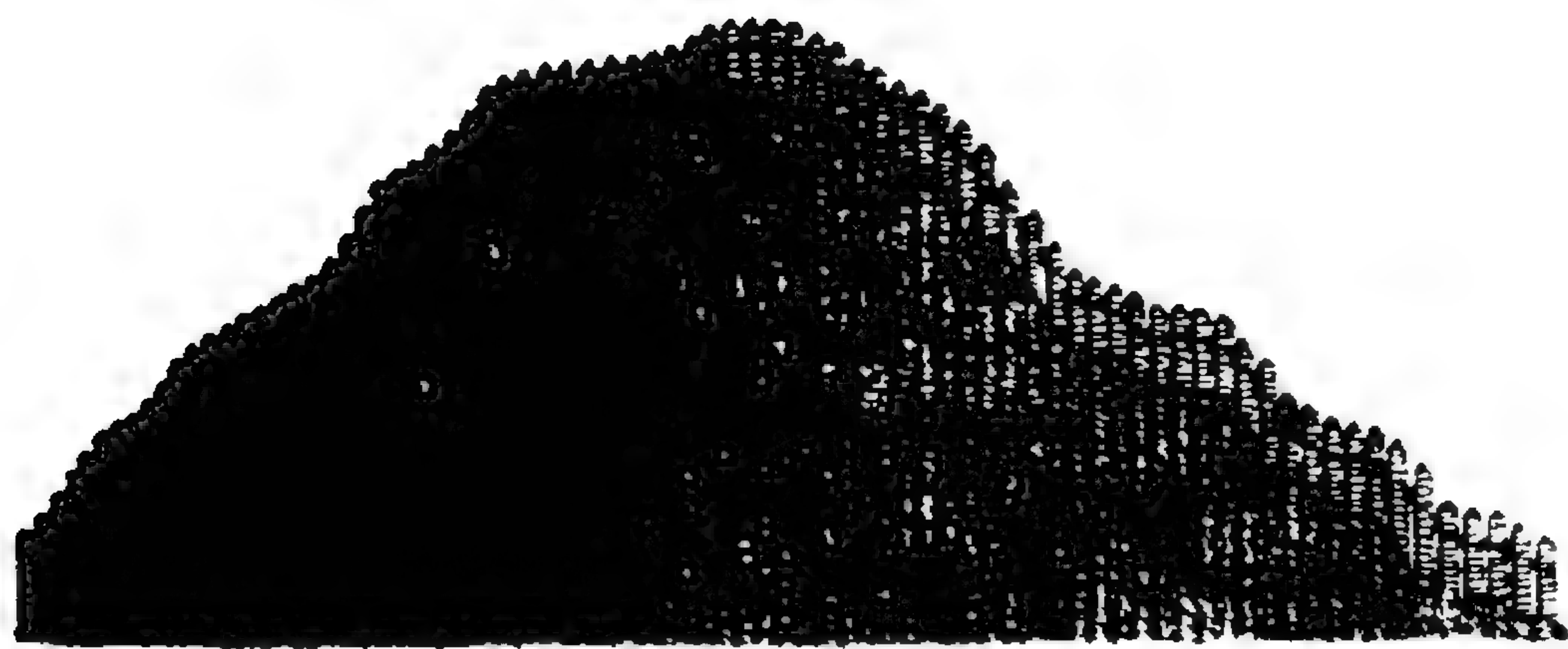
PARADOX VII. There are *two Places*, often visited by the *English*, whose Difference of *Longitude* is 10 Degrees, and Distance 600 Miles: And there are also *two other Places* usually frequented, whose Difference of *Longitude* is the same (i. e. 10 Degrees) yet their *real* Distance from each other is not much more than 60 *Miles*.

SOLUTION.—At the *Equator* every Degree of *Longitude* is equal to a Degree of *Latitude*, which is 60 Miles; so that two Places, 10 Degrees distant there, are 600 Miles asunder. But in the *Icy Sea* near the North of *Greenland*, where the *Whale Fishery* is carried on, a Degree of *Longitude* is but about 10 Miles (the Meridians approaching much nearer than at the Equator) consequently two Places, which are 10 Degrees distant there, will not be more than 100 Miles asunder.

PARADOX VIII. There are *three* distinct Places on the *Earth*, all differing in *Longitude* and *Latitude*, and distant from each other 2000 Miles completely, yet they all bear upon one and the same Point of the *Compass*.

SOLUTION.—All Places, though different in *Longitude* and *Latitude*, and at what Distance soever, with Respect to either *Pole*, bear upon the *same Point* of the *Compass*. For, to an Eye at the *North Pole*, all Places bear to the *South*; and at the *South Pole*, all Places bear to the *North*: Because, all the Points of the *Compass* (like the *Meridians*) unite there.

PARADOX IX. There are several *Mountains* in *England* and *Wales* of a prodigious Height, yet of such Nature and Situation, that were they to be paled across, they would take no more to complete that Boundary than would be found necessary to pale only across the *Base*, if the Mountain was removed.



SOLUTION.—This is *true* of all *Hills* whatever: For, as all *Paling* is set *perpendicular*, there must be just the same Quantity as if it stood upon the *Base*. This is clear from a Sight of the *Figure*, in which you see the *Pales* upon the *Ascent* and *Descent* of the Hill, transferred by Dots to the *Base* or *Ground-Line*, where the *Number* and *Distances* are *equal* in both Cases.

††† Hence it is manifest, that no *Hill*, (though it has a larger Surface than level Ground) will bear more *Trees*, or *Grain*, than the *Surface* would do upon which it stands.

PARADOX

PARADOX X. There are certain Places in *North Latitude*, whose longest *artificial Day* (that is, from *Sun rise* to *Sun set*) is considerably longer, than the longest *artificial Day* to the Inhabitants in the *same Degree of South Latitude*.

SOLUTION.—Those Places are at, or near, the *North Pole*, because the Sun spends about 8 Days more in the *artificial Day* under that *Pole*, where it continually shines from the 20th of *March* to the 23d of *September*, than in the *artificial Day* under the *South Pole*, where it shines from the 23d of *September* to the 20th of *March*, as may easily be tried by counting those Days in an *Almanack*.

Note; All Places in *North Latitude* have their Summer 8 Days longer than the *Southern*. See this explained at Page the 7th.

PARADOX XI. There is a certain *Island* in the *Baltick Sea*, to whose Inhabitants the *Sun* is distinctly visible in the Morning before he rises, and in the Evening after he is set.

SOLUTION.—This is true of all Places as well as of that *Island*; and is caused by the *Refraction* of the *Sun's Rays* entering the *Atmosphere* as he approaches the *Horizon*. The Reason of this is exhibited at Page 3rd. The like happens to the *Moon* and *Stars*: And the thicker the *Air* or *Atmosphere* is, the greater will be the *Refraction*. With us, the *Sun* is raised a whole *Breadth* above the *Horizon* when he is actually below it; and further *North*, and near the *Poles*, much more so.—*Note*; This made the *Dutch*, who wintered in 1597 at *Nova Zembla* (in the *Frigid Zone*, where the *Sun* is absent some Months in *Winter*) see the *Sun* 16 Days before they expected it, and before they could have seen it, if there had been no such *Refraction*.

PARADOX XII. There is a Place in *Great Britain*, where, when the Tide is in, and the Water high, you may see the *Cattle* feeding in a certain *Island*; but when the Tide is gone out, and the Water low, none can be seen, though they are still feeding in the same Place.

SOLUTION.—The Place may be the Wharf of *Greenwich*, and the *Island* the little Isle of *Dogs* over against it. This Appearance is caused by the *Refraction* of the Rays of *Light*, coming from the *Island* at the Time of *High Water*, just as the *Sun* is refracted by the *Air*. (See Page 3.) And seems to be above the *Horizon*, when it is actually below it. In like Manner a *Piece of Silver*, which cannot be seen in a *Basin* at a little Distance, will, if *Water* be poured upon it, immediately become visible.

PARADOX XIII. There is a certain *Village* in the Kingdom of *Naples*, situated in a very low Valley, and yet the *Sun* is nearer to the Inhabitants every *Noon* by 3000 Miles and upwards, than it is at the Time of its rising or setting.

SOLUTION.—The *Sun* is nearer at *Noon* to the Inhabitants of any Part of the *Earth*, as well as *Naples*, by the *Earth's Semi-Diameter*, which, by the most accurate Calculation, is 4000 measured Miles, and something more.

PARADOX XIV. There is a *certain Place* belonging to our *Earth*, where, if two Persons should chance to meet, they would stand *upright* upon the *Soles* of each others *Feet*, yet still retain their *natural Posture*.

SOLUTION.—The *Place* must be the *Center* of the *Earth*: For, if an Hole was made through the Middle of it, from *us*, to our *Antipodes*, (see Page 2.) and any one should descend in it from *this Side*, and another, at the same Time, descend from the *other Side*, they would both meet at the *Center*, Feet to Feet, still retaining their natural Posture.

PARADOX XV. There is a *Place* belonging to this *Earth*, in which if a *Ladder* be set, and 2 Men ascend it at the same Time, it will so happen, that the more they ascend, the further they will be asunder; notwithstanding the one should not go a Step higher than the other.

SOLUTION.—This *Place* is the *Center* of the *Earth*: For if the *Middle* of the *Ladder* be placed there, having one Half of it on this Side, the other Half on the opposite Side, and 2 Men, at the same Instant, begin at the *Center* to ascend it,—one towards *us*, the other towards the *Antipodes*, they will continually go further and further from each other, though both of them are of equal Height upon it; i. e. at an equal Distance from the *Center*.

PARADOX XVI. There is a *certain Place* in the *Mogul's Dominions*; where, if a Man possesses only a Piece of Land, but a few Yards square, he can boast, that in a *right Line*, he can pass from Place to Place 3000 Miles, and more.

SOLUTION.—This is *true* of *all Places*, as well as of the *Mogul's Dominions*: for whoever possesses but the smallest Piece of Ground, possesses not only the Surface of it, but is also Owner of that which extends quite down to the *Center* of the *Earth*. Hence it is evident, that all Estates, or Lands, are so many *Pyramids*, whose Points meet in the *Center* of the *Earth*, and whose Bases are the Land itself. If, therefore, there were made, or conceived to be made, a Descent to the Bottom of the Estate, or Middle of the *Earth*,—the true Distance would be 4000 Miles or more in a right Line; for so much it is from the Surface to the *Center* of this *Globe*.

GEOGRAPHICAL THEOREMS or PROPOSITIONS.

These Propositions, which are deducible from the Nature of the foregoing Work, the Learner will find to be so many *real Truths*, if he properly applies, and contemplates them upon his Globe.

I. Places lying under the *Equator* have *no Latitude*; because the Reckoning of Latitude begins at the Equator.

II. Under the *Poles* of the World the Latitude is greatest, or just 90 Degrees; because the Reckoning of Latitude ends at the Poles

III. Going from the *Equator* towards the *Poles*, the Latitude increases; but going towards the *Equator*, the Latitude diminishes.

IV. The *Latitude* of any Place is equal to the Height of the Pole in Degrees above the Horizon.

V. Places lying under that Meridian, which is accounted the *First*, have *no Longitude*; because the Reckoning of Longitude begins at that Meridian.

VI. Those Places have the greatest Longitude which lie under the Meridian, opposite to that where Longitude begins.

VII. The Longitude of any Place cannot be greater than 180 Degrees, Eastward or Westward; because that brings you to the Meridian opposite to that, where Longitude began to be counted from.

VIII. No two Places can be distant from one another above 180 Degrees; because 180 Degrees is Half the Circumference of a great Circle on the Globe.

IX. All the Inhabitants of the Earth enjoy the *Sun's Light* an equal Length of Time, and have him equally absent from them.

X. Under the *Equinoctial*, the Days and Nights are always equal to twelve Hours; but not exactly so in any other Place.

XI. In all Places between the Equator and the Poles, the Days and Nights are never equal but at the Time of the *Equinoxes* in March and September.

XII. The Difference between the Lengths of the Days and Nights in any Place on either *Side* the *Equator*, is greater in Proportion as the Latitude of that Place is greater.

XIII. In Places exactly under the *Polar Circles*, the Sun appears, when at the *Summer Tropic*, one whole Day without setting; and disappears one whole Day when in the *Winter Tropic*: At other Times it daily rises and sets as elsewhere.

XIV. In all Places of the *Frigid Zones*, the Sun appears every Year without setting for a certain Number of Days; and disappears for about the same Space of Time. And the nearer to, or further from the Pole those Places are, the longer or shorter is his Appearance in or Absence from them.

XV. To all Places under the same Semicircle of the Meridian, whether on the North or South Side of the Equator, it is *Noon*, or *Midnight*, or any other Hour of the Day or Night, at the same Time precisely.

XVI. Places lying Eastward of any other Place have their *Morning*, *Noon*, and *Evening* Hours earlier than at that Place by one Hour for every 15 Degrees it lies Eastward of it.

XVII. Places lying *Westward* of any other Place have their *Morning*, *Noon*, and *Evening* Hours later than at that Place by one Hour for every 15 Degrees it lies Westward of it.

XVIII. A Person in going *Eastward* quite round the Globe, will have gained one Day in his Reckoning of Time above the Account kept at the Place he departed from: But had his Circuit been made *Westward*, he would have been one Day behind the Account kept at that Place.

XIX. Two Persons setting out at the same Time from a Place to make the Circuit of the Globe, one going *Eastward*, the other *Westward*, will on their Return differ in their Account of Time by two entire Days.

XX. To all Places within the *Torrid Zone*, the Sun is *vertical*, i. e. comes over the Heads of the Inhabitants, *twice* a Year To those under the *Tropics*, once: But it is never vertical to those in the *Temperate* or *Frigid Zones*.

XXI. People who live to the *North* of the *Torrid Zone*, see the Sun due *South* at Noon; and those who live to the *South* of the *Torrid Zone* see the Sun due *North* at Noon.

XXII. Those who see the Sun to the *Northward* have their Shadows projected *Southward*; but when they see the Sun to the *Southward*, their Shadows are projected *Northward*.

XXIII. The nearer the Sun is to the *Zenith* of any Person, the shorter is the Shadow at Noon; but the further from the *Zenith* at Noon, the longer is the Shadow: The Shadow is always opposite to the Sun; and those who have the Sun in their *Zenith*, i. e. directly over their Heads, have no [Length of] Shadow at all.

XXIV. In all Places situated in a *Parallel Sphere*, i. e. at or very near the *Poles*, the Sun's daily Motion runs always *parallel*, or nearly so, to the respective Horizon of such Place.

XXV. In all Places situated in a *Right Sphere*, i. e. at or near the Equator, the Sun's daily Motion is *perpendicular*, or nearly so, to the Horizon of such Places.

XXVI. In all Places situated in an *Oblique Sphere*, i. e. lying between the Equator and the Poles, the Circle of the Sun's daily Motion is always oblique unto, or cutteth the Horizon of such Place at unequal Angles.

XXVII. On the Days of the *Equinoxes* only, that is, about the 20th of March, and 23d of September, the Sun rises exactly in the *East* Point of the Horizon, and sets in the *West* Point, to every Place upon Earth.

XXVIII. To Places in *North Latitude*, the Sun rises to the *Northward* of the *East*, and sets to the *Northward* of the *West*, from the *Vernal* to the *Autumnal* Equinox; and rises to the *Southward* of the *East*, and sets to the *South-*

Southward of the West, from the Time of the *Autumnal* Equinox to that of the *Vernal*.

Lastly; In all Places of the *Torrid Zone*, the Morning and Evening *Twilight* is *least*; in the *Frigid Zone* it is *greatest*; and in the *Temperate Zones* the *Twilight* is a *Medium* between the other two.

PARADOXES and THEOREMS respecting the *Phænomena* of the *Moon*, the *Planets*, and the *Stars*, as they will appear with more Propriety in a *View* of the *Heavens* and *Use* of the *Cælestial Globe*; we have therefore reserved them for a Conclusion to a Work of that Nature, now publishing: In the mean Time, give me leave to conclude in the Language of the most *divine Personage* that ever honoured this Globe with his Presence;—a *Person* to whom we are *all* infinitely indebted; and whose Words should have more Influence in pointing out the *Necessity* of this *Kind of Learning*, and urging our Pursuits in it, than all the *studied Phraseology* of the most *pompous Writers* or *Orators* in the World.

If I have told you EARTHLY Things, and ye believe not, how shall ye believe if I tell you of HEAVENLY Things?

A GEOGRAPHICAL TABLE,

Containing the NAME, SITUATION, LONGITUDE, and LATITUDE of all the remarkable CITIES and TOWNS in the WORLD.

Towns.	Provinces.	Countries.	Quar- ters.	Longi- tude.	Latitude.	Towns.	Provinces.	Countries.	Quar- ters.	Longi- tude.	Latitude.
				D. M.	D. M.					D. M.	D. M.
A											
Aberdeen	Marr	Scotland	Europe	1 45 W.	57 12 N.	Cape of Good Hope	Caffraria	Hottentots	Africa	16 20 E.	33 55 S.
Abo	Finland	Sweden	Europe	21 30 E.	60 30 N.	Cape Horn	Delfuego Isle	Patagonia	S. Am.	80 0 W.	55 30 S.
Agra	Agra	East-India	Asia	79 0 E.	26 20 N.	Carthageria	Carthageria	Terra-firma	S. Am.	77 0 W.	13 20 N.
Aix-la-Chapelle	Juliers	Germany	Europe	5 50 E.	50 45 N.	Carthage	Tunis	Barbary	Africa	9 0 E.	36 30 N.
Aleppo	Syria	Turkey	Asia	37 40 E.	36 30 N.	Charles-To.	Carolina	North	Amer.	79 0 W.	32 30 N.
Alexandria	Low. Egypt	Turkey	Africa	31 15 E.	30 40 N.	Civita Vec.	Pope's Ter.	Italy	Europe	12 30 E.	42 5 N.
Algiers	Algiers	Barbary	Africa	3 20 E.	36 40 N.	Cochin	Malabar	East-India	Asia	75 0 E.	9 30 N.
Amiens	Picardy	France	Europe	2 30 E.	49 53 N.	Cologne	Cologne	Germany	Europe	6 40 E.	50 55 N.
Amsterdam	Holland	Netherlands	Europe	4 30 E.	52 22 N.	Constantinople	Romania	Turkey	Europe	29 15 E.	41 1 N.
Antwerp	Brabant	Netherlands	Europe	4 15 E.	51 15 N.	Copenhagen	Zeland	Denmark	Europe	13 0 E.	55 40 N.
Archangel	Dwina	Russia	Europe	40 12 E.	64 34 N.	Corinth	Morea	Turkey	Europe	23 0 E.	37 30 N.
Astracan	Astracan	Russia	Asia	52 0 E.	47 0 N.	Cork	Munster	Ireland	Europe	8 25 W.	51 40 N.
Athens	Achaia	Turkey	Europe	24 15 E.	38 0 N.	Cracow	Lit. Poland	Poland	Europe	19 30 E.	50 10 N.
B						D					
Bagdat	Eyraca Ara.	Turkey	Asia	43 0 E.	33 20 N.	Damascus	Syria	Turkey	Asia	37 20 E.	33 15 N.
Barcelona	Catalonia	Spain	Europe	2 0 E.	41 26 N.	Dantzick	Prussia	Poland	Europe	19 0 E.	54 22 N.
Basil	Basil	Switzerland	Europe	7 40 E.	47 40 N.	Delft	Holland	Netherlands	Europe	4 5 E.	52 6 N.
Batavia	Java Isle	East-India	Asia	106 0 E.	6 0 S.	Delly	Delly	East-India	Asia	79 0 E.	28 0 N.
Belgrade	Servia	Turkey	Europe	21 20 E.	45 0 N.	Delphos	Achaia	Turkey	Europe	22 15 E.	38 30 N.
Bencoolen	Sumatra	Island	Asia	101 0 E.	4 0 S.	Dettingen	Wetteravia	Germany	Europe	8 45 E.	50 8 N.
Bergen	Beigen	Norway	Europe	6 0 E.	60 0 N.	Dieppe	Normandy	France	Europe	1 15 E.	49 55 N.
Berlin	Branden- burgh	Germany	Europe	14 50 E.	53 31 N.	Domingo St.	Hispaniola	Island	Amer.	70 0 W.	18 20 N.
Bern	Bern	Switzerland	Europe	7 20 E.	47 0 N.	Dover	Kent	England	Europe	1 25 E.	51 10 N.
Bologna	Romania	Italy	Europe	11 40 E.	44 29 N.	Dresden	Saxony	Germany	Europe	13 36 E.	51 0 N.
Bombay	Bombay Isle	East-India	Asia	72 0 E.	18 30 N.	Drontheim	Drontheim	Norway	Europe	10 30 E.	64 0 N.
Borneo	Borneo Isle	East-India	Asia	111 30 E.	4 30 N.	Dublin	Leinster	Ireland	Europe	6 25 W.	53 16 N.
Boston	Massachusetts	N. England	Amer.	71 0 W.	42 24 N.	Dunkirk	Flanders	Netherlands	Europe	2 20 E.	51 0 N.
Bordeaux	Guienne	France	Europe	0 40 W.	44 50 N.	E					
Branden- burgh	Branden- burgh	Germany	Europe	13 0 E.	52 52 N.	Edinburgh	Lothian	Scotland	Europe	3 0 W.	56 0 N.
Breda	Brabant	Netherlands	Europe	4 40 E.	51 40 N.	Embsen	Embsen	Germany	Europe	6 45 E.	53 40 N.
Breslaw	Silesia	Bohemia	Europe	17 0 E.	51 15 N.	Erzerum	Turcomania	Turkey	Asia	41 0 E.	40 0 N.
Brest	Bretany	France	Europe	4 30 W.	48 25 N.	Exeter	Devonshire	England	Europe	3 40 W.	50 44 N.
Bristol	Somerset	England	Europe	3 40 W.	51 30 N.	F					
Bruges	Flanders	Netherlands	Europe	3 5 E.	51 16 N.	Fe St.	New	Mexico	Amer.	109 0 W.	36 0 N.
Branswic	Saxony	Germany	Europe	10 30 E.	52 30 N.	Fertol	Gallicia	Spain	Europe	8 40 W.	43 30 N.
Brussels	Brabant	Netherlands	Europe	4 6 E.	51 0 N.	Fez	Fez	Morocco	Africa	6 0 W.	33 30 N.
Buenos Ayres	La Plata	South	Amer.	60 0 W.	34 55 S.	Florence	Juliany	Italy	Europe	12 15 E.	43 46 N.
C						Franckfort	Wetervia	Germany	Europe	7 30 E.	50 10 N.
Cadiz	Andalusia	Spain	Europe	6 40 W.	36 30 N.	Friburg	Friburg	Switzerland	Europe	6 55 E.	46 50 N.
Cairo	Grand Lower	Egypt	Africa	33 0 E.	30 0 N.	G					
Cambray	Cambray	Netherlands	Europe	3 15 E.	50 15 N.	Geneva	Savoy	Italy	Europe	6 0 E.	46 12 N.
N. Cambridge	Massachusetts	N. England	Amer.	70 4 W.	42 0 N.	Genoa	Genoa	Italy	Europe	9 30 E.	44 30 N.
Canlia	Island	Medit. Sea	Europe	25 0 E.	35 30 N.	Gibraltar	Andalusia	Spain	Europe	6 0 W.	36 0 N.
Canly	Ceylone	Island	Asia	79 0 E.	8 0 N.	Glasgow	Clydale	Scotland	Europe	4 3 W.	55 50 N.
Canton	Canton	China	Asia	112 30 E.	23 25 N.	Goa	Malabar	East-India	Asia	73 20 E.	15 31 N.
						Gottenburg	Gothland	Sweden	Europe	11 30 E.	57 42 N.
						Grenoble	Dauphine	France	Europe	5 28 E.	45 12 N.

N. B. The Royal Observatory at Greenwich, in Kent, (England) is situate in Long. 2° 5' 37" E. and Lat. 51° 28' 40" N.

F I N I S H